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G. C.

DAVID W. WELLS
BOSTON, MASS.
PRESIDENT 1907-1908

TRANSACTIONS

OF THE

AMERICAN HOMŒOPATHIC OPHTHALMOLOGICAL, OTOLOGICAL AND LARYNGOLOGICAL SOCIETY

TWENTY-FIRST ANNUAL MEETING

KANSAS CITY, MO.
JUNE, 1908

CATALOGUED
JUN 1 - 1915
J F B.

OFFICERS OF 1907-'08

PRESIDENT:

DAVID W. WELLS, M. D. ..... BOSTON, MASS.

FIRST VICE-PRESIDENT:

JOHN L. MOFFAT, M. D. ..... BROOKLYN, N. Y.

SECOND VICE-PRESIDENT:

ZUBER N. SHORT, M. D. ..... HOT SPRINGS, ARK.

SECRETARY:

H. S. WEAVER, M. D. ..... PHILADELPHIA, PA.

TREASURER:

G. DEWAYNE HALLETT, M. D. ..... NEW YORK CITY.

CENSORS:

WM. B. HUGHES, M. D. ..... LITTLE ROCK, ARK.
W. H. PHILIPS, M. D. ..... CLEVELAND, OHIO.
EDGAR J. GEORGE, M. D. ..... CHICAGO, ILL.
A. WORRALL PALMER, M. D. ..... NEW YORK CITY.
J. A. CAMPBELL, M. D. ..... ST. LOUIS, MO.

OFFICERS OF 1908-'09

PRESIDENT:

J. M. PATTERSON, M. D. .....Kansas City, Mo.

FIRST VICE-PRESIDENT:

E. H. LINNELL, M. D. .....Norwich, Conn.

SECOND VICE-PRESIDENT:

G. A. SHEPARD, M. D.....New York City.

SECRETARY:

W. L. BYWATER, M. D.....Iowa City, Ia.

TREASURER:

G. DeWAYNE HALLETT, M. D.....New York City.

CENSORS:

D. W. MYERS, M. D.....Grand Rapids, Mich.
G. M. McBEAN, M. D. .....Chicago, Ill.
G. S. PECK, M. D. .....Denver, Colo.
IRVING TOWNSEND, M. D.....New York City.
H. S. WILLARD, M. D.....Paterson, N. J.

Proceedings of the Twenty-First Annual Meeting

OF THE

American Homœopathic Ophthalmological, Otological and Laryngological Society

Held in Kansas City, Mo.

June 23-26, 1908

President David W. Wells called the meeting to order at 2:30 P. M., in the New Coates Hotel, June 23d, 1908, a quorum being present, and appointed the following committees:

a. Nominations—all the Ex-Presidents of the Society present.

b. Attendance—C. Joseph Swan.
Albert E. Cross.

c. Press—J. M. Patterson.

d. Transportation—all the Ex-Presidents of the Society present.

C. Gurnee Fellows moved, seconded by C. Joseph Swan, that the program be condensed by giving the precedence to papers whose authors are present; then second, papers whose authors are absent but whose discussor or discussors are present, and third, papers of which neither authors nor discussors are present can then be read by title or otherwise dealt with.—Voted.

The President stated that arrangements had been made to hold one session at the University of Kansas in order that the reflectoscope could be used in the reading of Dr. George B. Rice's paper. As Dr. Rice was absent, there would be no object in going there.

C. Joseph Swan moved that the session at the University of Kansas be omitted. Seconded. Carried.

C. Gurnee Fellows moved that Dr. Phillip's paper on the Retinoscope, No. 22 on the program, be read, and that the Symposium on the Retinoscope take place to-morrow evening, June 24th, to be immediately followed by the Informal Smoker on Failures. Carried.

The program as amended was then adopted. The President asked each one taking part in the discussion, to state his or her name and address on rising; the Secretary would then write it on the blackboard and would also write there the number, title, and author of each paper. This was for the benefit especially of new members, but would enable us all to get better acquainted with each other.

R. H. Street announced that he had a number of new instruments and some interesting pathological specimens which he had collected as a Committee on Exhibits. They would be on exhibition to-morrow evening.

The President appointed H. D. Schenck treasurer pro tem, in place of G. DeWayne Hallett, absent on account of illness.

Isaac C. Soulé moved that the Secretary be instructed to wire to Dr. Hallett the sympathy of the members of the Society. Passed by unanimous rising vote.

Adjourned.

SECOND SESSION—TUESDAY EVENING, JUNE 23D, 1908.

President Wells called the meeting to order at 8:50 P. M., a quorum present.

PRESIDENT'S ADDRESS.

THE NEED OF A BROADER HORIZON.

DAVID W. WELLS, M. D.,

Boston, Mass.

Fellow Members: As I was on my way to Europe at the time of the last session I heard nothing about the Jamestown meeting till my return, and in looking over my journals was quite surprised to find that you had honored me with the presidency. My first duty is therefore to say to you that I am sincerely grateful, and that I trust this twenty-first annual convention will be as profitable as those which have gone before.

After the Institute decided to meet this year at Oklahoma, you voted

to leave the decision of the place of *our* meeting to your executive committee. This was presumably a protest against the place selected. Correspondence with President Copeland brought out the fact that the Institute officers also had some misgivings about the matter, and it was earnestly requested that we defer considering the subject till a committee of the A. I. H. had visited Oklahoma. As you know, that city was found wanting in the proper accommodations for a large gathering, and it was not till the beginning of this year that the decision to meet in this "Gateway of the Southwest" was reached.

A meeting of our executive committee was immediately called in New York, at which it was decided to refer the question to the members by a postal card vote; this resulted as you know in the altruistic decision to go with the Institute. I have reviewed this matter for the sake of showing how this postponed the work of preparing the program.

Requests for papers simply called forth the question, "Where are we to meet?" Few of us are loyal enough to prepare papers unless we expect to be present to read them.

Notwithstanding this enforced delay in opening the campaign, and some lack of enthusiasm among us stay-at-home easterners, we are to be congratulated on the number and scope of the papers presented. The society is also to be congratulated on having attained its majority, and it has seemed to me a most fitting time—our twenty-first birthday—for some candid introspection.

The history of the society was so well reviewed by President Garrison two years ago, that it still must be fresh in your minds—all honor to the founders and pioneers—so I shall ask your attention to a consideration of our present condition.

We now number 202, including, I think we may say without egotism, the best men in our school who are devoting themselves to the special practice of eye, ear, nose and throat diseases. If there ever has been a time when we were proving the need of our existence, that time has long since passed. Our healthy and constant growth has demonstrated that we "fill a long felt want," and have come to stay.

We have all heard from our fathers something of the old New England custom of celebrating the twenty-first birthday. A boy who has been apprenticed for his board and clothes—"bound out" as it was called—was given a "freedom suit," which was something much finer than he had previously possessed. This homely ceremony was a recognition of the fact that he had entered upon man's estate.

Now in perfect candor and with a literal interpretation, I want to say that it is time "we put away childish things." Let us don our "freedom suits." Children frequently have to be teased and coaxed and whipped into doing their duty. This certainly ought not to be necessary with you professional gentlemen, members of this twenty-one year old society.

Let me be more explicit. Early in January a reply postal was sent to each member asking for a contribution of a paper, and also for a suggestion of some subject which the member would like some other member to present. The promises to contribute were not as numerous as one could wish, and only two replies were received to this second question, of which one was facetious. What can this mean? Every one of us has a dozen subjects on his tongue's end about which he needs more light, and isn't it fair to presume that some one of our 200 members may have been devoting himself to one of these special problems, and that we may have his experience for the asking?

The present officers have been somewhat severely criticized for not doing more "begging" for papers. While many letters have been written to those who made no reply to the postal, suggesting topics, it has not seemed to me quite courteous to importune one who had replied he would not be able to present a paper this year. I have been told that my predecessors have always found this necessary, and I confess to having been obliged to resort to it more than seems consistent with professional dignity.

Let us put away this childish procrastination. With our present membership, there should be so many papers volunteered that it would become necessary for the executive committee to pass upon the desirability of the subject and the fitness of the author. Permission to read a paper should be a coveted honor.

I presume you all remember Mark Twain's account of how Tom Sawyer did the task of whitewashing his aunt's fence. Tom was very much cast down at the thought of losing his Saturday holiday, and set to work with a heavy heart, but when presently one of his chums appeared and started to ridicule his being obliged to work, Tom's genius asserted itself, he replied, "Oh, this is a very particular job, and my aunt is a very particular woman. Why she wouldn't trust any other boy in the town to do this whitewashing." Then he applied himself to his task with such an artistic air that the would-be scoffer soon made overtures for the privilege of trying his hand, while Tom sat down as overseer.

In this way he sold out the job in bunches to chums two, three and four, lording it over them like a boss with his section hands.

Tom was a student of human nature. We are all tempted by *forbidden* fruit. The minute a club announces a waiting list, are we not seized with a desire to join? Now in all good faith I propose that we apply this principle in making up our annual program. Does this sound Utopian? I firmly believe that if some such Tom Sawyer policy were adopted there would be no trouble about the whitewashing.

Believing the trite saying that the greatest value of a paper is the discussion which it incites, your committee has tried this year the experiment of publishing pre-session abstracts of what each one is to present. It is usually impossible by a title to convey any adequate idea of the subject matter, but if we have all read these abstracts we are here ready to substantiate or question the author's contention

You are all probably aware that the ophthalmological section of the A. M. A. publishes in a pre-session paper-covered volume the complete papers, and that the author reads an abstract only. This may not be feasible for our smaller society, but it is hoped that the publication of the abstracts will be continued another year, and that they will be longer and more detailed. To omit the reading of the whole paper by the author is to lose the personal emphasis.

So my first suggestion is this, that we amend the By-Laws by striking out Section 2, Article VI, which reads:

"No report or paper shall be received by the society in an incomplete or unfinished condition, and the title of any proposed paper shall be forwarded to the president by April 1st of each year, and the completed paper by May 1st," and adopt the following for Section 2:

"All papers to be presented to this society whether voluntary or by request, must be in the hands of the executive committee by March 1st, Before March 15th the committee shall notify each author that his paper is or is not accepted, and no paper which fails to secure this endorsement shall be given a place on the program. Those who are so accepted shall thereupon prepare abstracts not to exceed 300 words, which must be received by the secretary by April 1st These abstracts shall be published in the May number of our official organ, and interleaved reprints of the same forwarded to each member before May 15."

I presume this suggestion will bring out the criticism that it could not be carried out, that some good contributors are always slow, and that they could not be brought up to time My answer to that would be

"then leave them out." If we start early enough it is no more of a task to complete a paper March 1st than May 1st

Let us reason together. When a man tells us that he "hasn't time" to do some duty, we know there are some *other* things which he prefers to do. We all of us have time for the things we *really* want to do.

The physician is occasionally prevented by some medical emergency from keeping an engagement, but let us be candid, haven't we worked that excuse for more than it is worth?

A few years ago Keith sent to the physicians of Boston complimentary tickets to see Houdini on a certain day and hour, and we were all there—the house was packed. We did not send regrets because it interfered with our office hours, and we did not go late.

We specialists have few duties that are more sacred than the obligation to present to our confreres whatever new facts we may have discovered and the result of our experience, and we *know* that we *have time* each year to put this on paper before March 1st.

We should continue to publish in our Proeedings a list of members present. This forms a sort of roll of honor and helps your new officers.

Since it is customary to elect to the various offices men who are widely scattered as soon as the meeting is over, it should become the duty of the incoming executive committee to convene immediately after election and formulate general plans for the next meeting.

The consultation of the whole could not fail to bring out a wiser program than any one man can produce, and the consensus of opinion would secure the best men on selected subjects. If it seemed desirable individuals or small committees could be appointed to work up special topics to be handled in a more comprehensive manner than has obtained in the past.

According to Section 2, Article II, of the By-Laws, the "executive committee shall arrange the business of the session, and attend to matters of business not otherwise specially provided for." From this it would seem that it was not intended that the securing of papers should devolve upon the president alone, as the custom now is. The assignment of the discussion has been in the hands of the secretary. I therefore recommend that Article III relative to the duties of officers be amended by adding a new section to be numbered 5, and to read as follows:

Art. III, Section 5. Immediately after election, or before the adjourn-

ment of the session, the executive committee-elect shall convene, and take such action as they may see fit regarding the program for the next year.

It has been suggested that it would be politic to abolish the initiation fee of $2.00. As no expense is involved there seems to be no good reason for compelling new members to pay $5.00 instead of the regular three dollars annual dues. If it is desirable to bring in new material we should make the financial obstacle lighter, not heavier. I do not know that this has ever deterred any one from joining, but it does seem illogical. If this suggestion be accepted, we should strike out the whole of Section 2, Article V, and from section 4 the words "admission fee and" and renumber the sections.

Now a word about our official organ, the HOMŒOPATHIC EYE, EAR AND THROAT JOURNAL. I found upon inquiry that only 126 of our membership are subscribers, so that official communications fail to reach one-third of those for whom they are intended. This necessitates a personal printed letter.

As the society cannot compel subscriptions, I interviewed the editors concerning a plan by which the society should pay for the journal for each member at a somewhat reduced price, say $1.00, and I am disapppointed that I have not been able to persuade the management that this is financially practicable. I had hoped to present to you a proposition to raise our annual dues $1.00, that is to pay $4.00, by which each member would become a subscriber automatically to the official organ. I still believe that some arrangement to this end can be made that will be mutually satisfactory, and I therefore recommend that the incoming executive committees be empowered by vote of the society to continue negotiations, in the hope of submitting a definite plan at our next annual meeting.

I am aware that what has been said savors somewhat of the scold, and is perhaps too dogmatic, but let me remind you that in these times strenuous presidential messages are strictly in order.

I would also express my thanks to those of you who by contributions, advice and suggestions have assisted in the preparation of the program. We are under special obligation to Dr. Patterson for his unremitting efforts and hearty co-operation.

Having considered the machinery of a successful meeting, with your permission I should like to add one more thought concerning the matter of the program.

It is consistent with our new manhood, that having donned our "freedom suits," we should mount the heights and survey the medical world with a wider horizon.

The "Debt of the Specialties to General Medicine" was very eloquently expounded to us by President Copeland, and President Mann very keenly seized the opposite horn of the dilemma in dealing with the "Debt of General Medicine to the Specialties."

It has seemed to me it would be profitable on this auspicious occasion to attempt to show that the corollary to these two propositions is the need of a broader horizon.

Specialization is the way of progress. Born into the civilization of the twentieth century each man appropriates, to the limit of his capacity, the medical lore of his predecessors, but soon finds himself at the circumference of the known at some one point. In answer to some beckoning will of the wisp he breaks a pathway into the unknown, spurred on by the insatiable passion for discovery. Most of us are content with following in the footsteps of some pioneer, with only an occasional side step from the path he made, satisfied if haply we find some gleanings of truth missed by him of the greater stride.

The only way to avoid bigotry is by frequent returns to the circle of the known, and by comparing notes with those who have been following out other trails, and with the stay-at-homes who have kept better informed with the generally known. We have had several illustrations of what seems to me the principal which should govern this society in the future. First and foremost the pursuit of our specialties, but second calling to our aid men eminent in the allied specialties. Dr. Dieffenbach's discussion of radium two years ago, and Dr. Richardson's timely presentation of nervous instability are notable examples.

There are very few pathological conditions of special organs which do not bear an etiological relation to the general economy. Thus the case should be viewed from the general practitioner's standpoint. My suggestion is to invite men from the other bureaus more frequently. It must be confessed that the presentation of our special subjects to the Institute has not been of sufficient interest to them to ensure us an audience, but we can call to our aid such men as we want.

De Schweinitz and Fife presented this year to the A. M. A. "A further contribution to the possible relationship of autointoxication to certain diseases of the cornea and uveal tract."

Very thoro and painstaking examinations were made of urine, blood,

feces, heart, lungs and general system; whatever was found wrong in the patient's metabolism was corrected and a very careful dietetic regimen established. The cases treated were relapsing sclerokeratitis, disseminated exudative choroiditis and relapsing uveitis of ten years standing.

"While no definite ptomain or toxin was isolated which would justify diagnosis of autointoxication in any single case," yet the clinical results "justify the conclusion that a causative relationship exists between outbreaks of uveal tract disease and lesions of the skin, especially acne, eczema and herpes zoster, and show that in one and the same patient it is probable that interpretation of an intestinal toxemia may sometimes be manifested in an effort of elimination by development of skin disease and sometimes by the appearanec of choroiditis or uveitis." These cases are certainly very discouraging to treat, and we are grateful for anything which offers a better prognosis.

The need of a wider horizon is particularly evident when we think of such diseases as syphilis and tuberculosis which play such havoc with the eye and other organs of special sense. We need to know something about spirochæte pallida and the possibility of an immunizing serum.

"Metchnikoff* has found that the chimpanzee is susceptible to this terrible human scourge, and that innoculation can be carried from animal to animal with decrease of virulence, so that an ape can be rendered immune to syphilis. Theoretically this gives us then a method of vaccination against syphilis akin to the Pasteur method of treating rabies, and Metchnikoff suggests that all prostitutes step up and protect themselves from the danger of this disease, which is an almost certain accompaniment of their trade."

The ophthalmo reaction for demonstrating tuberculosis forces us to become informed about the whole subject of the opsonic index, and Sir Almoner Wright's successful use of doses of .0001 mg. of tuberculin, which is about equivalent to our 6x. This is certainly approaching the infinitesimal in posology, but we must not confuse it with the theory of dynamization. The efficacy of extreme attenuations of toxic substances in no way substantiates the theory that inert substances become toxic thru attenuation.

The value of dionin in relieving some cases of iritis probably depends for its curative effect upon the Bier principle of passive hyperemia.

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*Thompson. "Glimpses of Medical Europe." 1908.

Neurasthenia is a very good example of a disease which may involve all the specialties and all kinds of therapeutics in its successful treatment. A working knowledge of neurology is an absolute essential, and coupled with this we need to know more about modern physiological psychology, and the significance of the behavior of the afferent nerve impulse as it passes thru the intermediate synapsis before emerging as the efferent or motor stimulus.

The operation of sympathectomy for the relief of glaucoma opens to our consideration a vast unknown region presided over, to what extent we know not, by the sympathetic system. The course of these fibers thru the carotid plexus and along the ophthalmic arteries, suggests that here may be the seat of many trophic disorders of the retina and uvea.

President Copeland has given us a very suggestive dissertation on the new theory of matter, the breaking up of the supposedly indivisible atom into ions. It is *claimed* by those whose opinions we must respect that the element helium has been produced from an emanation of radium. Can we conceive of anything more revolutionary than this—alchemy no longer a dream of the fifteenth century but a fact of the twentieth century?

The implications of all this are simply beyond our comprehension. How such facts may affect our preconceived notions of the action of the law of similia, and whether isopathy or homœopathy be the more important therapeutic principle, are questions which cannot at present be settled, but it is evident that our widened medical horizon must include them.

In this connection I want to ask you to cultivate the scientific spirit in our therapeutic studies. For several years the topic for the materia medica symposium was, "Report of a case cured by a drug, homœopathically administered but not in alternation and without adjuvant treatment, or, if used, where it was not changed and did not modify the cure."

It must be confessed that some of the contributors failed to grasp the full meaning of this title, and that their reported cases were therefore of little evidential value. We must if possible establish the causal relation between the remedy and the cure. Suggestion is present in all methods of treatment, the regular and the irregular, the medicinal and the physical. Its value is difficult and often impossible to estimate, and if our reported cases are to be of value in solving the riddle of therapeutics, we must never lose sight of the scientific method.

It is futile to attempt to ignore the success of Christian science and other forms of psychotherapeutics. We must tear off this bizarre apparel in which these cults masquerade and lay hold of the naked truth, and learn to apply it as a definite part of the proper conduct of a case.

Much light has been thrown on the problem of immunity by the study of the opsonins and the antitoxins; but what is the cause of the lowered index in any individual? We all recognize the effect of a mental disturbance, its baneful influence on digestion and other functions. Is it then so unreasonable to assume that the nervous system directly controls the production of these antibodies, which seem to be nature's agents in combatting disease?

It must be confessed that this very meager recital of these larger views is likely to leave one hopelessly discouraged, but we must face the facts.

Here then is my plea. The first essential to real progress is a wholesome realization of our ignorance. It behooves us to seize every opportunity to broaden our horizon, for we shall be able to understand the *special* only so far as we catch some glimpse of its relation to the whole field. Having caught the vision, we must follow the leading of our special study, and pursue it with a steadfast purpose. But we must frequently pause to compare results with other special students, and take advantage of every opportunity to correlate—literally, co-relate—our work to the whole developing science of medicine.

"Build thee more stately mansions, O my soul,
As the swift seasons roll!
Leave thy low vaulted past!
Let each new temple, nobler than the last,
Shut thee from heaven with a dome more vast."

Report of Treasurer, read by H. D. Schenck, and referred to Auditing Committee: G. W. Mackenzie and E. G. Linn.

REPORT OF THE TREASURER, JUNE 17TH, 1908.

Balance on hand, reported at Jamestown, Va.	$467.73
Six new members	30.00
Payment of dues	438.00
Total receipts,	$935.73

EXPENDITURES.

H. P. Bellows, expense of drug proving, under authority of this society	$ 6.35	
H. P. Bellows, for circulation of free copies of report of provings of belladonna, by society's vote,	100.00	
J. B. S. King, stenographic work of Jamestown meeting	100.00	
Cigars for meeting of June 18, 1907, Smoker	3.75	
Expenses of H. W. Hoyt, Secretary,—printing, stamps, telegrams, postals, addressing, stenography, signs	47.00	
Transactions, 1906, printing and binding, $143.22; cartons, $5.25; expressage, $22.11; postage, .64	171.22	
Expenses of David W. Wells, President, printing	46.50	
J. L. Moffat, telegrams for abstracts	4.00	
Expenses of G. DeWayne Hallett, Treasurer, stamps, $4.00; date stamp, .30; check stamp, .60; stamped envelopes, $21.24; stenography, $2.00	31.44	
C. S. Nathan, 500 half letter heads	2.00	
Total disbursements		$512.26
Cash on hand		$423.47

Respectfully submitted,

G. DeWayne Hallett, *Treasurer.*

Total membership, 191.

Resignations for presentation, 3.

Members in arrears of dues, 64; 29 members owe $3; 13 owe $6; 1 owes $8; 14 owe $9.00; 3 owe $12.00; 3 owe $15.00; and 1 owes $18.00.

Total back dues, $398.00.

Bills payable, none.

REPORT OF SECRETARY.

The Secretary wishes to report that this year has not been different from the preceding ones in the difficulty of getting the papers into

his hands by the first of May, as the by-laws direct. I know full well that it is a difficult task at times to have one's paper ready on time; but should all the members have the experience of being secretary for one year, I know the papers would be in early.

The transactions were delayed somewhat this year, due in part to sickness in my family. They were completed and should have been received by the members last week.

I made a number of corrections as to new addresses and the exact work each man is doing. I would like to suggest that each member look up his own name, address, and specialty, and if it is not correct, write the secretary at once, so that this year's publication may be correct.

I wish to thank our President for his assistance in the preparation of our program. He has had experience and I profited by it.

We have 202 members at present and it should be 500.

H. S. WEAVER, *Secretary.*

REPORT OF COMMITTEE ON DRUG-PROVING.

The fact of leading interest to the published work upon the test drug-proving of our society is the distribution of one hundred and fifty copies at the expense of the American Institute for Drug Proving, in accordance with a vote of its trustees Seven hundred and fifty dollars were voted for this purpose, and a copy of our book is now to be found in all the largest libraries of this country and in the libraries of all the leading medical colleges and largest hospitals, without regard to their school of practice.

At the last meeting of our society, it was voted "that one hundred dollars be paid Dr. Bellows to be used by him as his judgment dictates in distributing copies of the book on Belladonna to those who took part in the re-proving." I have to report that in accordance with this vote one hundred and nineteen complimentary copies of our book have been sent, in the name of the society, to those engaged in the active work of our proving without remuneration. Our Secretary has doubtless heard from the recipients in acknowledgment. Of the sum appropriated by the vote of our Society for this purpose $46.37 was expended for the cost of distribution and the remaining $53.63 was applied towardthe cost of the books.

A few sales of the books are being made by Messrs Boerike & Tafel,

who have the balance of the edition in charge, and it is still impossible to make a definite and final financial statement of expenditures and receipts.

The appreciation of the book and of the entire work of our Society in this Belladonna proving has been expressed in many letters received by me since our last meeting.

Respectfully submitted,

HORACE P. BELLOWS.

On motion the report was adopted and the committee continued.

REPORT OF THE BOARD OF CENSORS.

The Board of Censors recommended the following fifteen applicants, who were all duly elected to membership:

Arends, Katharine, 2708 Broadway, New York.
Arndt, George D., 11 E. Vine St., Mt. Vernon, O.
Barnum, Harold L., 320 S. Ohio St., Sedalia, Mo.
Collier, Clinton, C., 9151 Commercial Ave., Chicago.
Denman, George A., 421 Ohio Bldg., Toledo, O.
Denman, Ira Oscar, 421-423 Ohio Bldg., Toledo, O.
Dolinsky, Ethel M., 321 E. 6th Street, New York.
Homan, Ralph Waldo, Webster City, Ia.
Mackenzie, George W., 1831 Chestnut St., Philadelphia.
Miller, Daniel Wm., Blackwell, Okla.
Sage, Fred. Carlton, Commercial Bank Bldg., Waterloo, Ia.
Seeley, Oscar, 16th and Chestnut Sts., Philadelphia.
Seidlitz, G. N., 308-310 Olivia Bldg., St. Louis, Mo.
Smith, Frederic W., 1430 Wolf St., Philadelphia.
West, Charles E., Oglesby Bldg., Lincoln, Neb.

R. S. Copeland, Ex-President of the Society and President of the American Institute of Homœopathy, was introduced by the President and made a short speech of congratulation and welcome.

NEW BUSINESS.

Resignations were read from Alice B. Duffield and Frank B. Seitz.

On motion their resignations were accepted. O. L. Smith's membership expired automatically.

NEW OFFICERS.

The Committee on Nomination recommended the following list of officers for the consideration of the Society:—

President—J. M. PATTERSON, Kansas City, Mo.
1st Vice President—E. H. LINNELL, Norwich, Conn.
2d Vice President—G. A. SHEPARD, New York.
Secretary—W. L. BYWATER, Iowa City, Ia.
Treasurer—G. DEWAYNE HALLETT, New York.
Board of Censors:—
D. W. MYERS, Grand Rapids, Mich.
G. M. MCBEAN, Chicago, Ill.
G. S. PECK, Denver, Col.
IRVING TOWNSEND, New York.
H. S. WILLARD, Paterson, N. J.

E. W. Beebe moved that the report of the Nominating Committee be adopted and that the Secretary be instructed to cast the elective ballot of the Society for the above. Seconded. Carried.

Second Vice President Zuber N. Short took the chair while the President read his address.

A committee on President's address was appointed, consisting of C. Gurnee Fellows, Isaac C. Soulé and J. A. Campbell.

Adjourned.

THIRD SESSION—WEDNESDAY, JUNE 24TH, 1908, 2:30 P. M.

This was exclusively a scientific session.

FOURTH SESSION—WEDNESDAY, JUNE 24, 1908, 8:00 P. M.

J. A. Campbell moved to reconsider the vote by which the amended program was adopted. Seconded. Carried.

C. Gurnee Fellows moved that the meeting adjourn to 11:00 A. M. tomorrow and continue the program. Seconded. Carried.

FIFTH SESSION—THURSDAY MORNING, JUNE 25TH, 1908.

E. B. Woodward moved that Dr. Haseltine's paper be postponed until the afternoon and follow F. C. Richardson's paper. Seconded. Carried.

SIXTH SESSION—THURSDAY, JUNE 25TH, 2:30 P. M.

C. Gurnee Fellows moved that we express our appreciation of the courtesy of the gentlemen of the Neurological Bureau and of Dr. Richardson in particular, by a rising vote. Seconded. Carried.

REPORT OF AUDITING COMMITTEE.

G. W. Mackenzie reported verbally that the committee examined the records and vouchers in the Treasurer's report and found them correct.

On motion report was accepted.

REPORT ON PRESIDENT'S ADDRESS.

We wish to commend the report of the President as a review of the work of the Society for the past year and find it full of suggestions and useful hints and can heartily commend it as a whole. There are several suggestions made which would undoubtedly prove advantageous to the Society but which your committee does not think feasible at present. The suggestion as to abstracts of papers we particularly recommend, as the plan inaugurated by President Wells this year has proven to be valuable.

As to the second section of Article II. in the By-Laws to which the President refers, making the Executive Committee jointly responsible for the program with the President, we see no reason to not follow the suggestion of the President in the proposed change, except that experience has proven that one man can accomplish what a Committee cannot, and since he is a responsible officer it seems that he could carry on the work of the President using the Executive Committee as he sees fit.

We recommend, however, that Section 5 be added to By-Law III to read as suggested, to wit: "Immediately after election or before the adjournment of the session the executive committee elect shall convene and take such action as they may see fit regarding the program for next year." This will allow the President to command the services of the Executive Committee and possibly lead to an earlier arrangement of the program.

Since the question of our official organ and its distribution to members automatically cannot be decided at present, it is therefore recommended that our initiation fees and dues remain as they are until after

that question has been settled. We therefore commend that part of the President's address which recommends that the incoming Executive Committee be empowered by the adoption of this report to continue negotiations with the managers of the official journal on the lines already outlined.

As to the recommendation of the President in relation to Article IV of the Constitution, we believe the change should be made, inserting these words, as follows: "There shall also be elected a board of five censors" and crossing out the word "also" in the paragraph as published which simply makes the article explanatory of the fact that the President, two Vice Presidents, Secretary, and Treasurer shall constitute the Executive Committée. This involves a change in Section II, Article II of the By-Laws in crossing out the words "regularly chosen officers of this Society shall constitute" and the word "which" which makes the article read "the Executive Committee shall arrange the business of the session, etc."

Notice of the change in Constitution and By-Laws involving the change in the above mentioned subject is hereby given so that action may be taken upon them next year.

C. GURNEE FELLOWS,
JAMES A. CAMPBELL,
ISAAC SOULÉ.

On motion, the report was adopted.

H. D. Schenck presented the movement in the Institute to raise funds for the Council of Medical Education's promulgation of homœopathy and moved that the Treasurer be instructed to send one hundred dollars to the American Institute as the contribution of this Society to that fund.

Seconded. Carried.

REPORT OF COMMITTEE ON ATTENDANCE.

Number of members present, 36.
Average daily attendance, 47.
Average evening attendance, 26.
Tuesday afternoon, 44; evening, 28.
Wednesday afternon, 46; evening, 24.
Thursday afternoon, 50; evening, 26.

Respectfully submitted,
C. J. SWAN, *Chairman.*

Burton Haseltine moved that E. W. Beebe's paper be read next. Seconded. Carried.

Moved, seconded and carried that all other papers than these already read, be read by title. Seconded. Carried.

Adjourned sine die.

BILATERAL ORBITAL CELLULITIS—A CASE.

JOHN L. MOFFAT, M. D.,
Brooklyn-New York.

MONDAY evening, November 25, 1907, I was called by Dr. T. C. Wiggins to see, with him, Mr. E. A., married, aged 28, who presented a decided case of orbital cellulitis involving both eyes.

There was history of two rheumatic attacks and of a nasal catarrh which the patient did not consider worth treating: postnasal plugs on scabs, sometimes bloody, and hawking. Is a fairly hard smoker—pipe. For two or three days had been "dopy" with a glabellar headache, and yesterday the eyes swelled—first the right one. Last night he had three chills and was restless, aching.

Status præsens.—9:30 P. M. mouth 101.3 F. Both eyes proptosed, hard, feeling stiff, excursion very limited in all directions. Chemosis. Conjunctiva dry. Lids pale, red, edematous, feel stiff. Vision unaffected; media clear; fundi normal.

℞. Rhus 3x hourly. Every three hours a compress of Burow's Solution (aluminium acetate) 1 to 8.

The eyes began soon to improve, were very much better on the 29th and on December 3d the right eye was normal and the left practically so. There has been no recurrence up to the time of writing, June 13th, 1908.

The patient developed rheumatic fever and cardiac complication which kept him in the house three weeks longer, and for three more weeks the heart was irregular and intermittent.

The case is reported because, according to Fuchs, "a bilateral orbital cellulitis should be one of the greatest rarities." None of the authorities within reach speak of the bilateral variety except as an extension from, or result of, facial erysipelas.

Orbital cellulitis, especially if mild, may terminate in resolution, as in this instance, but it is always a serious disease because of its tendency to suppuration (Fox states that cellulitis almost invariably terminates in suppuration) and the danger of a fatal termination or loss of sight.

None of the ten authorities consulted mention rheumatism among the causes, but all agree that it may result from exposure to excessive

changes in temperature, and Gibbons thinks "there is reason to believe that a too prolonged application of cold to the eye may give rise to an orbital abscess.

Infection is probably the principal cause—traumatic, post-operative, metastatic, in influenza, erysipelas, dacryocystitis, pyemia, septicemia, suppurative parotitis, abscess of the lid; but most frequently it is extension—panophthalmitis, purulent meningitis, thrombosis of the cavernous sinus, periostitis of the orbital wall, suppurative periodontitis thru the maxillary antrum or anterior surface of the superior maxilla, and especially from suppuration or empyema of the ethmoid cells, frontal sinus and antrum; possibly from the sphenoid cells.

Was this a rheumatic case? The patient certainly did not suggest sinusitis of so high a degree as to cause bilateral orbital cellulitis. There was headache at the glabella for two or three days, suggestive rather of the frontal sinus, and we hardly expect that sinus to infect both orbits on the same day.

There were no apparent nasal symptoms when the patient was visited; questioning as to the possible cause elicited the history of post-nasal catarrh as above. The frontal headache was no longer complained of.

Primary (serous) tenonitis is attributed at times to rheumatism, but it is extremely rare, and the characteristic feature is a watery chemosis out of proportion to the other symptoms; edema of the lids is absent in slight and not marked in any, cases.

There was no thrombosis of the cavernous sinus; the whole history of the case shows that clearly.

Embolism of endocardial origin would have caused more serious and prolonged consequences. The patient did not speak of having caught cold from exposure to very severe weather or change of temperature.

Can we call the case idiopathic? That means that there was no apparent cause.

Is it not safe to add rheumatism to the list of the possible causes of bilateral orbital cellulitis? In view of the frequency of edematous conditions in inflammatory rheumatism this does not seem far fetched.

The patient had also gelsemium, apis and maybe a little bryonia (I recommended giving that one evening, should it be called for), but the eyes seemed to improve most rapidly while rhus 30 was being administered.

1136 Dean Street.

OCULAR ERRORS. A SIMPLE OFFICE EQUIPMENT FOR THEIR DISCOVERY BY THE NON-SPECIALIST.

G. DE WAYNE HALLETT, M. D., O. ET A. CHIR.

New York.

ALL physicians have had patients whose symptoms have been so distressing that they have persistently sought relief through various methods and procedures; symptoms which have been of so obscure an etiology as to puzzle those in special and general practice, and, they have wonderingly observed in some cases the complete relief of such symptoms through attention to the eyes and eye-muscle faults, even when the eyes had not hitherto been suspected.

Such thoughtful physicians of my acquaintance have asked me to guide them in some simple tests specially adapted to discover eye faults where there is no complaint of defective vision.

It is now becoming more generally appreciated that two excellent eyes, like two excellent horses, may be improperly harnessed and therefore work poorly together.

Elaborating these tests for such physicians has suggested the subject for this short paper.

At the outset I wish to say that the paper can be of interest only to those in general practice and the tests are so simple, the deductions so obvious that they become a valuable and acceptable diagnostic aid.

No attempt is made to make the physician an oculist, or to take the oculist's place, but enough is given to find eye-faults even where vision is normal, and if vision is less than normal there must certainly be a fault.

It is quite appreciated that to the members of this society I am presenting simple rudiments, but I have never seen them so grouped before and I can remember when they would have been a help to me.

It is probable that the following simple little outfit would aid the physician in detecting ocular errors that may be present in his patients:

(1) Snellen's test card for use at 20 feet.

(2) Diamond type for use at 12 inches.

(3) Convex .50 diopter spherical lens, marked + .50 s.

(4) Convex 1. diopter spherical lens, marked + 1. s.
(5) Convex .50 diopter cylindrical lens, marked + .50 c.
(6) Concave .50 diopter cylindrical lens, marked — .50 c.
(7) Astigmic clock dial.
(8) Red cover glass.
(9) Maddox multiple rod.
(10) Candle or other small point of light.

The manner of testing with each article will be briefly stated, together with the significance of the findings.

SNELLEN'S TEST CARD.

Snellen's test card is used to test the visual acuity of each eye separately at 20 feet, which, for practical purposes, is considered to be the remote distance.

Many physicians have provided themselves with this card and use it as their only test, erroneously concluding that if a patient can read the seventh line of letters the eyes can not be a source of trouble.

As usually arranged, the large letter being at the top, each eye should read the letters in the seventh line, and the visual acuity in so doing is expressed in a fraction: as $^{20}/_{20}$, or perfect vision, the numerator being the distance, 20 feet, and the denominator is taken from the size of the type that should be read at that distance, *i. e.*, the seventh line.

In a 15 foot office $^{15}/_{15}$ will be normal, and in a 10 foot office $^{10}/_{10}$, etc.

The sizes of the letters on the card are mathematically graded from above downward so that the large upper letter should be seen as easily at 200 feet as the seventh line of letters is at 20 feet.

Reading, then, only the top letter would be expressed in a fraction as $^{20}/_{200}$, and the next line as $^{20}/_{100}$, and so on, $^{20}/_{70}$, $^{20}/_{50}$, $^{20}/_{40}$, $^{20}/_{30}$, $^{20}/_{20}$, $^{20}/_{15}$, $^{20}/_{10}$, the latter being the ninth line and usually the last one on the card.

The vision is therefore taken, first for the right eye (the other being covered) and then for the left and noted in a fraction according to the lowest line of letters read.

Normal eyes should read $^{20}/_{20}$, but this visual acuity is also present in, (A) eyes that are hyperopic (far-sighted), and (B) eyes that have a low degree of astigmia of any variety, hyperopic (far-sighted),

myopic (near-sighted), or mixed (far-sighted in one meridian of the cornea and near-sighted in another).

Therefore the power of reading as expressed by the fraction of $^{20}/_{20}$, which we call normal visual acuity, does not mean a normal eye nor eyes free from strain, and because of this it is necessary to examine further into this function.

Indeed, it is quite true that eyes that have normal visual acuity only by overcoming errors of refraction as mentioned above as "A" and "B" are the very eyes that occasion distress to the patient, and if we accepted the $^{20}/_{20}$ as proof of normality, we would fall far short of relieving such distress.

The $^{20}/_{20}$ eye has such vision only after overcoming such error of refraction, an exertion which it is quite capable of for the moment, but, if continued hour after hour, day after day, and perhaps under faulty conditions of health, light and occupation, causes distress.

This is the reason then that persons believing themselves, or believed to have, normal vision suffer various distresses, while those with eyes so faulty that no amount of effort will give them normal distant vision do not have distress.

These latter persons do not see clearly in the distance, and cannot by any amount of effort, and, therefore, the eye makes no effort so to do, and is comfortable. They see what they *can* see and let it go at that.

CONVEX SPHERICAL LENSES, + .50 AND + 1. DIOPTER.

Convex spherical lenses correct hyperopia (far-sight) and if the eye (with $^{20}/_{20}$ or other visual acuity) sees *as well* or better when one or the other, or both together, of these lenses is placed before it, then that eye has a refractive error.

The lenses used to determine this may not even approximate the error, but still the statement is true that such eye is subject to strain.

CONVEX AND CONCAVE CYLINDRICAL LENSES.

If a cylindrical lens is placed before an eye and rotated in the trial frame or fingers, and vision is better in some one position of this lens than it is in another position, then that eye has astigmia.

In an eye normal or free from astigmia, the effect of a cylindrical lens, as regards visual acuity, will be the same in one position as in all others.

I suggest that a convex .50 diopter and a concave .50 diopter cylindrical lens will usually disclose the presence of an astigmic error, at least in an eye of moderate defect, and if the defect be of larger proportions its presence will otherwise be quite evident.

ASTIGMIC CLOCK DIAL.

This is a white card with radiating black lines, used for the detection of astigmia. Set the card in a good light, 10, 15 or 20 feet away, and if the patient states that some of the lines are brighter, blacker and sharper in outline than are certain other lines, then astigmia is assumed to be present.

REDUCED VISUAL ACUITY.

The failure of a patient to read the seventh line of Snellen's test card with each eye separately will indicate a fault of refraction or of the transmitting or of the receptive elements of the eye, and, unless previously passed upon and satisfactorily accounted for by a competent observer, should be the subject of examination whether there is complaint of distress or not.

THE RED GLASS.

When there is *marked* failure of parallelism of the projected visual lines, due to faulty eye muscles, that fact will be disclosed by double images of a small light twenty feet away if a red glass is placed over one eye, the other remaining uncovered.

The double images seen with the red cover glass represent a considerable fault, one that may even amount to an actual strabismus, but it happens that lesser muscular faults are the frequent cause of serious disturbance, and for their detection the Maddox rod is essential.

THE MULTIPLE MADDOX ROD.

Place the rod before one eye, the other remaining uncovered, and direct the patient to look at a small light at twenty feet distance.

The uncovered eye will see it as it really is, while the image seen through the rod will be distorted into a long line or streak of light.

There will be no tendency to fuse these dissimilar images and any faulty position of the eye will cause the line of light to be separated from the point of light by at least some distance.

This test should be made first with a vertical line of light, and second with a horizontal one.

If the rod is placed before the right eye and the vertical line stands to the right of the point of light it indicates that the eyes have a tendency to converge (esorphoria) in distant vision, and if they be to the left, they tend to diverge (exophoria).

The distress which this muscular fault causes is in proportion to its amount, and becomes a factor for consideration in the prescription of lenses.

When the horizontal line fails to pass through the point of light it indicates a faulty elevation of one eye above its fellow and this is a very fruitful source of most distressing asthenopic symptoms, symptoms which may, indeed, be hard to appreciate as being of ocular origin.

THE POINT OF LIGHT.

This may be either a candle in which the flame is not allowed to be very large, or it may be a small round light in an opaque chimney.

PRESBYOPIA.

Presbyopia, or old-sight, manifests itself about the age of forty-five years, but the time is variable, depending upon the condition of general health, occupation, and the pre-existing condition of the refraction.

Its symptoms are a need of better illumination, and a desire to hold printing and work at a greater distance from the eyes than heretofore.

That is, fine objects are blurred at the usual near point.

A test for this may be roughly made by asking the patient to read diamond type at twelve inches.

OUTFIT FOR THESE TESTS.

For the benefit of any who may be interested in the subject as here presented, and who may not be familiar with dealers in optical goods where such articles may be procured. I have asked The Yanss Optical Company, 307 Fourth Ave., N. Y. C., to stock this outfit, and they will supply it at a reasonable charge.

128 West 85th Street.

DISCUSSION.

JOHN L. MOFFAT: In preparing a lecture or a paper of instructions the great difficulties are, first, what to omit, and, second, how to express one's self clearly and tersely. The writer of the paper under discussion has succeeded in both respects.

I would suggest that the Snellen card have Holbrook Lowell's colored stripes—red between the 15 and 20 foot letters, blue between 30 and 40, and green between 60 and 80. While ten feet might give crudely approximate results if no greater distance is attainable, twenty feet (or six meters) should be secured if possible.

My judgment is that 0.75 Cylinders would be preferable to 0.50; the latter, requiring a finer discrimination, would elicit less positive answers by most patients.

Years ago I abandoned the radiating lines and have asked my patients, when being tested for astigmia, to count the lines in each spoke of the clock faced wheel with three lines pointing to each of the hours. Most patients have not sufficient discrimination to report accurately which single line is more distinct or more black.

Nothing has been said about myopia; it would not be too confusing to state the fact, already well known to the laity, that failure to distinguish $^{20}/_{20}$ letters may be due to true near-sight—myopia. Physicians intelligent enough to use these tests could also take the far and near point for diamond type. The approximation of both of these, together with reduced distant vision not improved by one of the cylinders, and particularly if associated with esophoria, diagnose myopia as accurately as the other conditions are indicated in this scheme.

With all the other explanations Dr. Hallett might have explained that presbyopia is the recession of the near point (have given a table for its position at different ages) as well as that of the far point; and I suggest that he dwell upon the importance of the best illumination for near and distant visual tests, the avoidance of glare, and that he give an approximate standard—full reflected daylight, or about 16 candle power light close to the letters and shaded from the eye.

W. K. FOOTE (Omaha): Just as this excellent paper is intended for the general practitioner, so this discussion is directed to the nonspecialist rather than the oculist. Emphasis should be laid on the fact that tho a patient may read $^{20}/_{20}$ he may still have a refractive error. Further that it is the low degrees of error that are responsible for eye strain and reflex symptoms, and that in the greater refractive errors, where visual acuity is considerably diminished, no effort can compensate, and so no effort is made. Many general practitioners keep in their office at least the Snellen test card for use at twenty feet. Too often it is taken for granted that ability to read $^{20}/_{20}$ indicates freedom from any cause of eye strain.

I would suggest the additional use of a plus .25 c. and a minus .25 c.

In my practice many of my patients are given very weak cylinders with excellent results. Many patients suffering with reflex symptoms suggestive of possible eye strain will strenuously insist that their vision is acute, and that there is no possibility of their eyes being at fault. Such patients should be informed that many individuals are given glasses not to improve their vision, but to enable them to see as well as before minus a compensatory muscular effort which may be productive of nervous reflex symptoms.

A 15 degree prism might be added to this outfit to further help in determining the presence of muscular insufficiency. While it is supposed that there will be no effort to fuse such dissimilar images as a candle light, and an elongated rainbow streak gotten with the Maddox rod, still I occasionally meet with patients who seem to unconsciously make the effort at fusion so that the distance between the two images varies. In such cases the use of a 15 degree prism base down separates the two images so widely in a vertical direction that there is no effort to fuse them, and we can sometimes detect a wider or greater divergence than with the Maddox rod.

PARAFFIN AFTER ENUCLEATION.

PHILIP RICE, M. D.,

Berkeley, Cal.

THE many methods offered to overcome the unsightliness of the sunken and staring glass eye are evidence that no one fulfills all the requirements.

The frequent failure of union of the scleral edges in Mule's operation has caused this method to be practically abandoned; and the large percentage of failures in the Ramsey paraffin injection method has caused many never to attempt it. And yet, not considering any other method, these two in my judgment contain all the elements that go to make up a simple and perfect operation. The chief aim in them all is the building up of a stump of appropriate size which has a good degree of mobility. To obtain this some foreign substance must be introduced.

Of the many that present themselves, paraffin is probably the best. It is light, inexpensive and easily sterilized, and can readily be moulded into the exact size required in any case. It need not be introduced in the liquid state. It soon becomes hard after its introduction—in fact must do so—hence there can be no objection to putting it in the solid state to begin with.

Practically every failure Ramsey experienced with the use of paraffin was due to the fact that it being liquid he had no way of accurately determining the amount wanted; nor could he prevent its getting between the edges of the wound when drawing up his suture.

Now, since the recti muscles are as active after enucleation—if they have something to act on—as when attached to the sclera, there is no good reason for leaving the sclera and taking the chances of non-union of its edges (which is the frequent cause of failures from the Mule's operation). As for the mobility of the artificial eye, this does not depend so much upon the action of the recti, as upon the orbicularis muscle.

A certain degree of motion can be obtained only when a given amount of free space exists between the edges of the shell and the bony wall, a thing that can be had only when the shell rests upon a full stump. When this latter is not present, to overcome the depression the

shell must be large, and this prevents any free space; and then, tho there be a very active stump, the shell is immovable.

I am constrained to mention a method that I have used for several years, and with uniform good results. I do not put it forth as original, but I do as being in the highest degree practical. As has been intimated, I use paraffin, and tho invariably of the finest quality obtainable, I was compelled after our fire two years ago to use ordinary grocers' paraffin in one case, and with perfect results. What I use melts at 120° F. I sterilize it by bringing bichloride 1/1000 to a boiling point, and then dropping a piece of paraffin into it and allowing it to boil for five minutes or more. This is then allowed to cool to a point where it can be easily moulded. After thoroly sterilizing the hands a number of balls, varying from 1/3 to 1 inch in diameter, are made and put into a saline solution, where they are kept ready for use.

It must be plain that because paraffin boils at the low temperature it does, simply bringing it to a boiling point is not sufficient for perfect sterilization. Boiling it in water for five or ten minutes no doubt would also answer the purpose, but because of the subsequent handling while moulding it into shape I prefer the bichloride. As soon as the boiling ceases it rises to the surface and can be taken off in any consistency desired.

The enucleation is done in the usual way. As soon as the hemorrhage has been checked, a number of the paraffin balls are tried, and the largest that will permit easy coaptation of the edges is selected. Undue tension must not be made, otherwise there is danger of the edges separating when the suture is removed.

A purse string suture is introduced, the greatest care being taken in drawing it up that no conjunctiva turns in between the edges of the wound.

The only failure I have had was due to this mistake. In my earlier operations the recti muscles were sutured to the conjunctiva before being severed; but in my later ones I have paid no attention to this and can see no difference in the amount of mobility in the prothesis.

The suture is removed about the sixth day; at the end of another week the artificial eye is inserted. In one case the eye was inserted on the eleventh day with perfect success.

There is absolutely no depression, and the amount of motion in a number of cases has been such that, until quite extreme lateral rotation was made, there was perfect binocular motion.

2428 Bancroft Way.

DISCUSSION.

G. D. HALLETT (New York): Czermak (1) says, "Mule's operation has proved a failure. Such foreign bodies are all cast off sooner or later," and yet Dr. E. J. Bissell (2) reports ten cases with an improved technique and no failures, six of which were then two years old.

The general opinion of ophthalmic surgeons seems to be that implantation of any foreign substance with retention of the sclera deserves an unfavorable prognosis.

The desire for a good cosmetic effect is quite universally expressed by our patients, as is shown by the not infrequent request for the removal of an unsightly eye in which some degree of vision remains, and cosmesis takes a prominent place with the surgeon.

Good motion and good imitation of a natural eye, in size, color, and position both of the eye and the lids, with safety and permanence is the desire in the cases.

The most obvious defect of the ordinary prothesis is the effect it has of a sunken, depressed and smaller eye; Mule's operation and the various forms of implantation are intended to remedy this defect, which they accomplish by holding forward the center of the prothesis.

The ordinary prothesis is held as far forward as possible, partly by building up the concavity but more particularly by having as large a shell as possible, and thus motion is sacrified to prominence, since—as Dr. Rice very truly says—"Motion can be obtained only when a certain amount of free space exists between the edges of the shell and the bony wall."

Dr. Oatman (3) described the implantation of spheres of paraffin in 1903, and stated that they became firmly fixed by connective tissue down-growths.

Liquid paraffin as an artificial stump builder (L. Webster Fox) is an inferior procedure. Fox in his text book condemns the retention of the sclera and advises the implantation of gold balls in early and remote enucleation.

A paraffin ball implanted by Dr. S. Payne (4) was reported after one year to give excellent cosmetic effect with extensive motion, and in the discussion two paraffin balls were reported by Dr. Marple as having been cast out.

The preparation of the paraffin as described by the writer seems most appropriate. His only failure was ascribed to faulty coaptation of the conjunctiva, and each ball has apparently proved perfectly sterile, but rubber gloves for the handling might be a further safeguard.

Paraffin ball implantation therefore seems to fulfill every requirement: it is safe, permanent, and gives good motion and position to the artificial eye. It has better shape and obviates the leakage of the liquid preparation, and it is enclosed in a tissue endowed with better qualities for strong and early union than the sclera.

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(1) Czermak, *Die augenarztlichen Operationen,* s. 447.
(2) Bissell, *Trans. A. H. O., O. and L. Soc.,* 1903.
(3) Oatman, *Arch. Ophth.,* vol. XXXII, p. 389, 1903.
(4) Payne, *Arch. Ophth.,* vol. XXXV, p. 399.

CASES CURED WITH INTERNAL REMEDY ONLY.

W. L. BYWATER, M. D.,

Iowa City, Ia.

MRS. J., aged 32, called at my office on October 13, 1907, with both ears suppurating following an attack of scarlet fever; had been discharging continuously for six or seven years. The discharge was of an extremely foul odor. Large perforations were observed in both tympanic membranes. I suggested that I treat her daily; she informed me that this would be impossible as she lived thirteen miles in the country and could not be away from home. I told her that treatment would in that case necessarily be very unsatisfactory, but that I would give her a remedy to take. I also instructed her to keep the ears as clean as she could by wiping them out with dry cotton.

Silicea 30 was prescribed, one dose on retiring. Three weeks later, on November 3d, she returned. On examination I found one ear entirely well, and the only way one could detect any discharge in the other ear was from the odor on the cotton used in wiping out the ear. On her last visit, December 1, 1907, no discharge, ears healed with the exception of the large perforations which remained. This case had no local applications of any kind, and silicea 30 was the only internal remedy.

Dr. K., aged 38, wrote me that he had a mucopurulent discharge from the antrum. From his description of the discharge, and other symptoms, I gave him kali bichromicum. I heard nothing more from him and supposed he was cured, until October, 1907, nearly two years after my prescription, he informed me that the discharge had continued right along, being aggravated at times from catching cold, etc., and he had now come for an operation. After a careful examination I suggested that we first try a remedy, and if it failed then I would operate. He agreed, and I put him upon *hydrastis* 3x. Nothing else was used. Within a month he wrote me that the discharge had entirely ceased and that he was feeling the best he had felt in three years. In a letter which I received from him a few weeks ago (May, 1908), he stated that he had had no trouble since taking the remedy.

Mrs. G., aged 35, after going the rounds of the old school specialists came to me as a last resort. She had never taken homœopathic medicine. An examination revealed partial atrophy of the auditory nerve. The watch could be heard upon contact with the right ear, but not with the left. Could not hear the telephone ring or the clock strike. Much roaring in the ears. I could get no specific history; in fact, the only thing she could tell in addition to the loss of hearing was that she had fallen and struck her head upon the brick pavement. I could see no connection between the fall and the loss of hearing; but not knowing what else to do, I prescribed *china* 3x. The ears began to clear up, hearing returned gradually until patient could hear the watch from twelve to fifteen inches with either ear. I gave her the last prescription on July 28, 1907. When she paid her bill she remarked that of all the money she had ever paid physicians she begrudged that the least of any.

8 N. Clinton Street.

HYDRASTIS CANADENSIS IN POSTNASAL CATARRH.

HERBERT DANA SCHENCK, B. S., M. D., O. ET A. CHIR.,

Brooklyn-New York.

HYDRASTIS is a drug causing inflammation of mucous membranes with profuse discharges, resembling very closely in this respect pulsatilla and somewhat stannum. In the nose it causes snuffling and occasional sneezing, some excoriated feeling in the nares and constant inclination to blow the nose, with a free discharge of mucus. There is hawking of mucus from the posterior nares and throat, with the sensation of a curtain opening and shutting the nares during inspiration, leaving first the left and then the right stopped. There is a discharge of *thick, yellow matter* from the nose with a stuffed up sensation in the posterior nares and nasal sinuses, and there may be smarting in the posterior nares and in the throat. There is hawking from increased mucus with *sticky mucus around the fauces; mucus in the fauces which cannot be swallowed;* a feeling of a lump in the pharynx giving a sensation of suffocation, relieved by drawing long breaths thru the mouth.

On Thursday, January 9th a woman about 35 years of age, who was approaching the eighth month of pregnancy but in the best general health, was taken an hour or two after retiring with severe pain in the right ear. From heat and other local applications some relief was found, so that she managed to sleep a few hours during the night.

When seen on the 10th there was a most acute inflammation of the right middle ear. The engorgement was so intense that numerous small hæmorrhages from the arterioles had been thrown out into the membrana tympani. The ear was very sensitive to touch and to manipulation of any kind. Her Eustachian tube was patulous. She had had for three or four days preceding this a profuse, watery, smarting coryza, which had now become thick, and the nostrils, particularly the right, were closely plugged with thick, viscid mucus, which was with difficulty swabbed out from the posterior nares and removed anteriorly thru the nose. Some benzoinol with menthol was applied to the mucous membrane of the pharynx and nares, and hydrastis 3x, one grain every hour was prescribed. The next day the conditions were slightly improved. The hydrastis was continued every two hours.

On Sunday, the 13th, there was a very marked diminution of the mucus in the nares, and the breathing had been much freer the night before. The same treatment was continued locally and internally on the 13th, and by the 14th she was so much improved that internally hydrastis 6 was substituted for the 3x. The improvement continued to be marked so that by the 18th—eight days from the time she was first seen—there was almost no mucus in the nasopharynx or nose. She was only seen once after this, on the 21st, when the conditions were so much improved that she was discharged.

There was also used in this case in connection with the ear but not applied to the nose, however, the leucodescent lamp, which had a most marked effect in controlling the middle ear inflammation.

THUJA OCCIDENTALIS IN CHALAZIA.

HERBERT DANA SCHENCK, B. S., M. D., O. ET A. CHIR.,

Brooklyn-New York.

THUJA has among its other eye symptoms an agglutination of the lids; a pimple on the margin of the lower lid; pressure as of fine sand in the eyes; a feeling as if the lids were swollen; sensation of foreign body in the eye; dryness and sandy feeling; some stinging. Clinically it is proved to have an effect upon various tumors of the lid.

CASE ONE.—A man 58 years of age with a large amount of hyperopia and hyperopic astigmia in each eye. He had worn glasses constantly for many years but had not had either the distance or readers changed for a long time. About six months ago he developed a swelling on the left lower lid, which gradually increased with more or less conjunctival inflammation and discomfort from the size of the growth. This was removed in February and resolution was fairly complete in ten days, so that there was nothing to be seen. In a few weeks, however, a similar growth appeared on the same lid a little nearer the inner canthus, altho in the meantime his refraction had been carefully corrected both for distance and reading. The application of thuja 1 to 50 twice a day on the lids, with the thirtieth internally, has now caused the growth to disappear completely and all the discomfort and conjunctival inflammation to subside.

CASE TWO.—A young man of 28, a salesman who uses his eyes not more than an hour or two a day, had a large chalazion form in the left lower lid near the outer canthus. He had considerable inflammation in the conjunctiva but no other trouble. This was removed last fall and for several months he had no further trouble. In February near the inner canthus another chalazion appeared as large as a small pea and several smaller ones each side of it. This was large enough to be noticeable and to cause him some slight discomfort because of the pressure. The application of thuja, 1 to 50 twice a day, was begun with thuja internally. At the present writing the smaller chalazia have entirely disappeared from the lid and the larger one is soft and easily compressible. It looks as tho it would entirely disappear in a short

time without further operative interference. In this case a moderate degree of myopic astigmia was found, which had recently been corrected, altho he was suffering from almost no asthenopic symptoms. This did not happen, however, until after he had been under the effects of thuja for several weeks.

75 Halsey Street.

THUJA IN PAPILLOMA OF THE LARYNX.

THOMAS M. STEWART, M. D.,

Cincinnati, O.

IN the fall of 1886 this patient, then over fifty years age, consulted a laryngologist in New York city, who correctly diagnosed the case as papilloma.

The tumor was beneath the right vocal cord, small and firm. The opinion was given that it would be of slow growth, that no surgical interference was advisable, and that nothing could be done.

By great care and change of climate as needed, the patient, an attorney who had retired from the bench and practically from practice on account of the hoarseness and inconvenience, was able to get along until the spring of 1906.

A specialist was again consulted, and some consideration was given to the opinion that the growth might be taking on a malignant aspect. It was causing almost total loss of voice and great discomfort. The description given to the patient, who was very well informed on the subject of laryngeal papilloma, was that it had three prongs to it and came up between the cords in such a way as to prevent any approximation of them.

The advice however was to do nothing. The weak condition of the patient and his advanced age (79 years) precluded operation. The suggestion was made that the tumor might spontaneously disappear, as it seemed to nearly do so once before. From which suggestion the patient derived some hope, but no relief to the local inconvenience, the loss of voice, and the mental worry of possibly living long enough to choke to death.

At this point, April 28, 1906, the patient called to see me. From the history of the case, and from two careful laryngoscopic examinations, my diagnosis was papilloma. We talked over the usual treatment of such cases, and while deciding against operation I advised homœopathic internal medication.

Thuja 1st was prescribed, four discs per day. In six weeks improvement was noticed in the lessening size of the growth; the patient gradually recovered much use of the voice and resumed some law parctice.

Thuja was continued from one dose to four doses per day for a full year. The remedy has been used occasionally whenever the patient felt any need for it.

A recent strain of the voice, incident to an argument before a jury (April 3, 1908), caused him to be quite hoarse, but no trace of the growth has been discovered save its flattened base (April 30, 1908). The hoarseness yielded to the usual treatment for such cases.

Thuja was given because of its action on the sympathetic nerve centers, causing acrid secretions from the mucous membranes, corroding ulcers and polypi; on the fluids dissolution results and acrid secretions follow.

Thuja has cured or markedly relieved many cases of papilloma; this causes me to remark that if this patient had had thuja, or some other indicated remedy, he would have had a much more comfortable time, mentally and physically, during the twenty years and more prior to his introduction to it.

Traction Building.

DISCUSSION.

W. L. BYWATER (Iowa City): The case presented by Dr. Stewart is an interesting one and goes to show what the properly indicated remedy will do when prescribed internally. It is to be regretted that this patient did not become acquainted with the doctor about twenty years earlier.

I am of the opinion that this class of cases is rare. At least I recall having seen but one patient so afflicted. I had no difficulty in diagnosing the condition, as the history pointed to a papilloma.

On January 23, 1903, a man of 37 years of age, called upon me for a throat difficulty. He complained of a feeling of fulness, some little irritation and a pronounced hoarseness. This had been going on for three months. The laryngoscope revealed a small tumor on the right side just above the cord. The cord was red and thickened.

In addition he informed me that three years previously he had contracted gonorrhea, which was neglected, and ran on for several months. He also had a number of seed warts on his hands; these had come within the past couple of years.

As I said before, the history aided me in making a diagnosis and that, with the seed warts on the cutaneous surface, led me to prescribe thuja 3x. The symptoms soon began to clear up, and after two months the warts had disappeared and the papilloma of the larynx was much smaller. The other symptoms had improved. At the end of six months the patient was entirely well so far as I could detect.

THE DIAGNOSIS AND TREATMENT OF LABYRINTH SUPPURATION.

G. W. MACKENZIE, M. D.,

Philadelphia, Penn.

OUR knowledge of labyrinth suppuration, developed during the last few years, has revolutionized the science of otology. At the present time no one can pretend to practice otology who is not thoroughly familiar with this subject.

An understanding of labyrinth suppuration presupposes:

1. A knowledge of the anatomy of the inner ear and the relative positions of the semicircular canals in the skull.

2. A knowledge of the physiology, especially of the static labyrinth, as determined by Ewald, Breuer, Crum-Brown, Mach, Kreidl, Alexander, Kubo, Barany, Stein, Krotoscheiner and others.

Upon the more recently gained knowledge of the physiology of the static labyrinth, exact examination methods have been developed which make possible an exact diagnosis in every case of labyrinth suppuration.

The time allowed will not permit me to discuss in detail the physiology of the labyrinth; however, for practical purposes, enough of the physiology will be brought out while discussing the diagnosis and the methods of examination used. The symptoms and signs of acute labyrinth suppuration are briefly as follows:

1. Deafness of sudden onset.
2. Vertigo with nausea and vomiting.
3. Spontaneous rotatory nystagmus toward the sound side.
4. Disturbances of equilibrium.
5. Negative caloric reaction.
6. Diminished or negative reaction to turning.
7. Diminished or negative reaction to Galvanism.

We shall now discuss separately the above symptoms and signs in the order given.

1. **Deafness of sudden onset.**

Deafness is a constant symptom of acute labyrinth suppuration which differentiates it from other forms of labyrinthitis—diffuse

serous labyrinthitis and circumscribed labyrinthitis. In the suppurative form of labyrinthitis the deafness is complete and permanent, while in the other forms there are rests of hearing and the ultimate prognosis to hearing is good.

Since no one would care to remove a labyrinth where there are rests of hearing, nor on the other hand neglect to operate a suppurating labyrinth where the mortality without operation is above 70 per cent, the determination of deafness becomes a question of vital importance to the patient's hearing in one instance and the patient's life in the other.

Prior to the introduction of the new, small (a_1) fork of Bezold, the only errors made in the diagnosis of labyrinth suppuration arose from the uncertainty in the determination of deafness in a case where all other signs and symptoms were positive. At that time the best method for recognizing onesided deafness was the 2 and 3 meter speaking-tube.

I have examined cases of unilateral deafness with the speaking tube when it seemed impossible for the patient to hear from the good ear, which was completely closed with a moistened finger, and yet they were able to repeat whispered words. Experimentally I have examined cases where the labyrinth had been removed, and the patient was apparently able to hear whispered words from that side through the tube. The only explanation is that the sound must have been transmitted to the well ear. To avoid all possibility of transmission of sounds to the well ear, Bezold designed the new small (a_1) fork, which has the advantage of being heard very distinctly when held close to the ear and of not being heard at all at a distance of 7 or 8 inches (the width of the skull or the distance necessary to be traversed in order to be heard by the other ear). I have examined a number of cases of one-sided deafness, using both methods (the tube and the small a_1 fork) and the fork has invariably given more satisfactory results than the 3 meter tube. Beside these methods, the other functional hearing tests (Rinnè, Schwabach, Weber and the continuous chain of forks) will be an aid in diagnosing one-sided deafness.

2. Vertigo with nausea and vomiting.

In acute labyrinth suppuration the vertigo is very intense and invariably associated with nausea and vomiting. The vertigo is most pronounced at the onset of the process but gradually diminishes after

two or three days; however, brief attacks of vertigo may be produced by rapid movements of the head for several weeks afterward. This vertigo is characteristic and known as vestibular vertigo; it must be differentiated from ocular and central vertigo. Vestibular vertigo is characterized by certain subjective phenomena. The patient feels that the room and surrounding objects are moving about him in a circle around his axis of vision. The direction of this movement in a case of left labyrinth suppuration is the same as that made by the hands of a clock, and when the eyes are closed the patient has the sensation of falling to the right. In case of a right labyrinth suppuration the sensations are reversed.

Vestibular vertigo combined with sudden deafness speaks for some destructive process of the labyrinth, and when found in the course of chronic suppuration of the middle ear speaks for acute labyrinth suppuration.

For a further description of vestibular vertigo and its differentiation from the other types, see Panse's Work on *Schwindel,* 1902.

3. **Spontaneous rotatory nystagmus to the sound side.**

This symptom is constantly present; like the vertigo it is most pronounced upon the first day and gradually diminishes during the following three or four weeks, when it practically ceases. In exceptional cases it may be observed months afterward.

The vestibular nystagmus is due to the overbalance of impulses from the normal side (*Normal Tonus*). This normal tonus can be better understood when we produce artificially a condition similar to that found in labyrinth destruction. This experiment can be made upon normal people by applying the anode to one side (say the right side); this produces an anelectrotonus of the right side, suppressing the normal tonus. At the same time the normal tonus from the opposite side or left side produces an overbalance of vestibular impulses from the left side and thereby a nystagmus to the left. Spontaneous nystagmus associated with labyrinth suppuration is most pronounced when the patient looks toward his well side (the side of his nystagmus); however, during the first few days it may be observed in all positions of the eyeball.

4. **Disturbances of equilibrium.**

These may be divided into two separate forms:—the early and late. The *early* is more marked and is so intense as to amount to a loss of

equilibrium, which compels the patient to seek a recumbent position. The tendency of the patient is to fall toward the diseased side. This tendency is increased when the eyes are closed. Falling to the diseased side may be termed "Reaction falling"—an associated phenomenon of nystagmus.

The explanation of this phenomenon is as follows: In a case of right labyrinth suppuration the patient has rotary nystagmus to the left, accompanied by the subjective sensation of falling to the left. In his attempt to correct this subjective sensation of falling to the left, he overcorrects and actually falls to the right (toward the diseased side).

The *late form* of disturbance of equilibrium is not accepted by some authors, including Barany; however I hold that there is a late form, as do also Alexander, Stein, Krotoscheiner, Frey and Hammerschlag. Recently I conducted a series of experiments upon a number of cases of late one-sided labyrinth destruction and deaf-mutes (see Gleichgewichtsstorungen, *Archives of Physiology*—1908).

I found that, without exception, every case of late one-sided labyrinth destruction showed positive signs of disturbance in equilibrium by the following tests: Rhomberg, the Gait (forward, backward and to the sides, with open and closed eyes), standing on one foot, hopping forward and backward upon one foot, elevation on the Alexander Stein goniometer with the face forward, backward and to the two sides, with open and closed eyes.

These late disturbances of equilibrium are due to a different cause from that of the early. They are caused by a loss of function in the sense organ for the perception of locomotion in the three directions of space.

5. **Negative caloric reaction.**

This examination method belongs to Barany (see his book on *Physiologie und Pathologie des Bogengangs Apparat*). Before the time of Barany, Breuer and others had experimentally produced vertigo in man and nystagmus of the head in animals, by the use of cold water syringed into the external canal; however, it remained for Barany to first adopt these reactions for clinical purposes.

The normal ear syringed with water colder than the body temperature, produces a rotatory nystagmus to the opposite side, lasting for a few minutes; whereas water warmer than the body tem-

perature produces the opposite effect—rotatory nystagmus to the same side. These caloric reactions are explained by Barany as due to currents set up in the endolymph in the same manner as all other currents are produced in vessels containing fluid, when the temperature of any part of the fluid is changed.

One thing characteristic of the caloric reaction, worth mentioning here, is that the nystagmus may be changed in character and direction by changes in position of the head. As an illustration: If we syringe the right ear with cold water with the head in an upright position a rotatory nystagmus to the left is produced; now if we turn the head 90° to the left so that the head rests upon the left shoulder, the rotatory nystagmus to the left changes to a horizontal nystagmus to the right.

The caloric test is the most certain qualitative test of the static labyrinth, and when negative speaks for destruction of function in the semicircular canals (a most valuable diagnostic sign of labyrinth suppuration). This method of examination is inapplicable in cases of obstruction of the external canal (atresia, stricture, severe otitis externa, furunculosus and large polyps), also in very acute inflammation with small perforations. In such cases it is well to be able to rely upon other methods of examination yet to be described.

6. **Diminished or negative reactions to turning.**

This is an important sign found in labyrinth suppuration. The turning test is made with the patient sitting on a revolving stool, fitted with a handle which the examiner uses to turn the patient.

Normally, turning to the right with the head in the upright position produces a horizontal nystagmus to the right during turning and a horizontal nystagmus to the left upon stopping. If the head is bent forward 90° a rotatory nystagmus to the right is produced during turning and to the left after turning. This is called the "After turning nystagmus" or "After nystagmus."

If the head is bent to the right 90° (that is the right side of the face upon the right shoulder) a vertical nystagmus upwards is produced during turning to the right and vertically downwards after turning.

If the position of the head is changed 180° to any of the above positions, the opposite nystagmi are produced. Bending of the head 45° in either of the lateral positions produces oblique nystagmi. In short,

it is possible to produce nystagmus in any desired direction by change of position of the head. It is even possible to produce mixed forms; as an illustration: Upon bending the head backward 45° we get a horizontal nystagmus to one side combined with a rotatory nystagmus to the opposite side. For practical purposes, however we may limit our examinations to the horizontal and rotatory nystagmi.

Normally the horizontal "after-nystagmus" lasts from 15 to 30 seconds after 10 turnings; the rotatory a trifle longer; however, the duration of the horizontal after-nystagmus may be prolonged by the use of opaque spectacles or having the patient look at a distant object to avoid convergence of the eyes which inhibits the nystagmus.

If, in a case of suspected right sided labyrinth suppuration the reaction to the right side is negative or of but a few seconds duration, while the reaction to the left side is 15 seconds or more, then the diagnosis is assured.

7. **Diminished or negative galvanic reaction.**

Prior to six months ago the galvanic reaction of the labyrinth was a much neglected subject, owing to the crude and inaccurate methods used. Since then I advised a simple method of examination (*Archives of Otology,* 1908—"Galvanische Untersuchung des Statische Labyrinthes"), the examination is made with one pole in the hand and the second pole applied to the region of the ear, just in front of and above the tragus. The current is applied, gradually increasing until nystagmus is apparent and the strength of current necessary to produce the reaction noted in milliamperes. A record is made of the kathodal and anodal reaction of the two sides.

Normally 4 ma. kathodal to the right ear produces rotary nystagmus to the right, and 4 ma. anode to the right ear produces rotatory nystagmus to the left, and vice versa for the left ear.

In a case of right sided labyrinth suppuration the kathode to the right ear fails to produce a reaction with as much as 8 ma. or more, while kathode to the left ear produces a reaction with less than 4 ma. In a similar manner we obtain the reactions with the anode (the right ear does not react).

A further examination of the opening and closing nystagmus of the two sides is as follows:

Right ear diseased:

R. Ear—K. O. N. > K. C. N.
A. C. N. > A. O. N.
L. Ear—K. C. N. > K. O. N.
A. O. N. > A. C. N.

The above reactions apply to the earlier stages of acute labyrinth suppuration; however, after secondary degeneration of the nerve has taken place it is impossible to obtain either kathodal or anodal reactions from the diseased side.

In closing the subject of diagnosis, I wish to emphasize that sudden deafness in the course of middle ear suppuration, together with rotatory nystagmus to the sound side and vertigo, speak for labyrinth suppuration; but in addition, when the static labyrinth of that side is nonreactive to the above mentioned tests, then the diagnosis of labyrinth suppuration is certain.

TREATMENT.

There is but one treatment for acute labyrinth suppuration; that is immediate radical operation combined with the labyrinth operation, for the following reasons:

1.—Acute labyrinth suppuration is more frequently associated with intracranial complications than not; the more frequent of which complications are meningitis and cerebellar abscess.

2.—The prognosis in nonoperated cases is bad; the mortality being over 70 per cent., whereas the mortality from labyrinth operation is less than 8 per cent. While the mortality is high in the nonoperative cases, it is still higher in those cases where the radical operation is done and the labyrinth operation left undone than in those cases where no operation is done at all. In other words it is safer to leave a case of labyrinth suppuration to itself than to attempt any half way measures.

OPERATION.

The operation consists, first, in the regular Kuster-Bergmann radical; second, the laying free of the dura of the middle and posterior fossæ and removing the bridge of bone between them; third, removal of the semicircular canals from behind and the free opening of the

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Foot Note.—K O N = Kathodal Opening Nystagmus. : K C N = Kathodal Closing Nystagmus; A O N = Anode Opening Nystagmus; A C N = Anode Closing Nystagmus; > = greater than.

cochlea and vestibule in front, allowing the facial nerve to remain intact.

The dura is exposed for a double purpose:—

1.—To allow room for the labyrinth operation and

2.—To permit inspection of the membranes, since many of these cases have more or less meningitis as a complication.

The question of labyrinth suppuration is a very important one and almost too large for a single paper; my effort has been to cover as briefly as possible the entire subject.

1831 Chestnut St.

DISCUSSION.

OTIS D. STICKNEY (Atlantic City): The study of the static labyrinthine physiology and pathology being so comparatively new and most of this original work having been done in Europe, very few of our American otologists are so qualified to speak upon it as Dr. MacKenzie.

Fortunately suppurative labyrinthitis is an infrequent complication of middle ear suppuration; however, we should be familiar with its symptoms and with the tests, just described for its diagnosis.

Before every mastoid operation, whether it be the simple or radical, it would be better for both the patient and operator if the latter were aware of the condition of the labyrinth. To the patient it would be an advantage because proper operative measures, if necessary, could be directed to the labyrinth as well as to the mastoid and middle ear. It would be better for the surgeon, for the reason that if convinced by symptoms indicating involvement or destruction of the labyrinth, his plan for the operation and prognosis could be given accordingly. Then in the case of a fatal issue, the operator would feel less reprehensible and certainly could not be blamed to such an extent by the friends and relatives, having previously acquainted them with the seriousness of this complication.

The caloric test of the semicircular canals is of easy application. In fact, we frequently get the reaction when we do not wish it, that is, when we are syringing patients' ears for the purpose of cleansing. This test may be performed with either hot or cold water and can be conveniently made with an irrigation apparatus and Hartman cannula. If cold water is used, for example in the right ear, and the head is held erect and the labyrinth is irritable, a rotatory nystagmus to the left will be the result. This reaction, as Dr. Mackenzie has stated, is probably due to the currents produced in the endolymph by the changing of its temperature. Another explanation which has been advanced, while if not the true one at least helps us to better remember the reaction, is that the cold water has an inhibiting or temporary paralyzing

effect on the labyrinthine nerve endings of the syringed side. Thereby the nerve tonus of this side has been lessened and being greater on the opposite side, the nystagmus naturally goes in that direction.

Hot water, on the contrary, is believed to have an irritating action on the nerve endings, stimulating them and increasing the nerve tonus of the syringed side, as a result of which nystagmus is directed toward the side in which the hot water is used.

The turning test with a properly constructed chair and sufficient practice, appears not difficult. In making this test, one should be very careful as to the position of the patient's head. The result, to be expected, can be remembered most readily if the patient's head is held either in the upright position or tilted forward. The chair should then be revolved in the opposite direction ten times. For example if the left ear were being examined the turning should be to the right, then if the labyrinth were irritable a horizontal or rotatory nystagmus to the left would be produced, which may be best observed by illumination reflected from a head mirror. If the head were held erect during the turning the nystagmus would be horizontal, and if the head were tilted forward the nystagmus would be rotatory.

In case the head should be inclined backwards and the chair turned to the right, the nystagmus would then be directed to the right. The latter result is confusing, the direction of the nystagmus being opposite to that produced when the head is in the upright position or bent forward. To avoid this confusion it would be better if the patient were always directed to hold the head in either of the two latter mentioned positions.

It is both impracticable and impossible for the examiner to observe the nystagmus during the turning; however, the movements of the eyes may be felt by the patient himself if he will place the finger tips on the closed lids. We need only be concerned with the after nystagmus. Both labyrinths should be examined by this method and a comparison of the duration of the nystagmus of the two sides made.

The irritability of the semicircular canals may be found to be increased, normal, diminished, or absent, depending on the underlying pathological conditions. If the labyrinth be hyperemic, the reaction may be very severe, as shown by the stronger nystagmus and more decided dizziness, nausea, and possibly vomiting and cramps, and by these occurring after a fewer number of turnings than when the canals of the opposite side are examined. On the other hand, if diffuse suppuration of the labyrinth be present the reaction would be diminished or absent.

As a criticism of the galvanic test, it has been found that the reaction is present even after the function of the internal ear has been destroyed, as ascertained by the caloric, turning, equilibrium and hearing tests, the reaction under such circumstances being given by the nerve which is intact before the labyrinthine ending; however, the author of the paper under discussion has stated that the reaction ap-

plies especially to the earlier stages of acute labyrinth suppuration, so that this does not invalidate the value of the test.

The equilibrium tests, which have been enumerated, may be quickly made and require no special apparatus, unless it be a goniometer, which is such a cumbersome affair that very few will be seen in private offices.

Attention has been called to the fact that these new methods of examination of the semicircular canals also assist in making the diagnosis of cerebellar abscess and tumor of the auditory nerve. In these suspected cases of intracranial complications, the action of the eye muscles, pupillary reactions and fundus should be examined for signs of increased pressure. Paralysis of the external rectus muscle frequently indicates an existing pathological condition in the posterior fossa.

After due consideration of the symptoms of suddenly appearing deafness, nystagmus, dizziness, nausea and vomiting, together with the results of examination of the static labyrinth, signs of increased intracranial pressure with disturbance of the pulse rate and temperature curve, we should be both forewarned and forearmed for the labyrinthine and intracranial complications of suppurative otitis media.

The labyrinth operation even when performed by the skillful European otologists, who are so sure of their anatomy and who are daily opening mastoids, appears to be a very formidable surgical procedure; indeed it must be, since both the middle and posterior fossa are generously opened, the lateral sinus freely exposed, and part of the petrous portion of the temporal bone removed.

Whether or not the mortality of eight per centum could be kept so low or improved by our otologists remains to be seen; this will depend principally on the early recognition of labyrinth suppuration, on how soon after its diagnosis proper operative measures are taken, and whether our otologists have the anatomical knowledge and skill possessed by the best European ear operators. It seems that only their best ear surgeons are doing the labyrinth operations.

The comparison of the mortality of 70 per centum without operation and 8 per centum with it, allows no doubt as to the advisability of the operative treatment. If we ourselves do not possess the anatomical knowledge and skill necessary for its successful performance, some one who does should be called. Above all, we should be thoroughly acquainted with the symptoms indicating pathological conditions of the labyrinth and with the best methods for ascertaining the state of its functions.

Dr. Mackenzie deserves our thanks for presenting such a valuable contribution to the meager amount of literature, in English, on this new, important and abstruse branch of otology.

BURTON HASELTINE (Chicago): I rise, not because I can contribute anything of value to the subject, but because I feel that to allow this paper to go by without notice would be an injustice to the author whose modesty has prevented him from stating how large a part he

himself took in this original work. It is really an epoch-making paper and we should express our appreciation of it. The subject is one of such importance that the entire neurological world is asking questions about it, and this paper would be welcomed by any neurological society in the world.

Suppurative disease of the labyrinth is rare in private practice but not so in European clinics. It is not so very infrequent in public institutions in this country or in clinics. My own experience in such cases has not been great. I have had one case with a death rate of one hundred per cent. The labyrinth involvement was not recognized and the case was in a bad way when it came into my hands. We went in and cleaned out the labyrinth to the best of our ability, with the result that the patient died. I would like some information as to clinical cures in these cases. I would also like to know something about prognosis; where so many cases die, how are we to estimate the chances of a patient—that is upon what data?

DR. MACKENZIE: I cannot agree with Dr. Stickney that labyrinth suppuration is rather infrequent. On the contrary it is more frequent than any of the intracranial complications, and is eight times more frequent than sinus thrombosis. Furthermore, the large majority of cases of diffuse meningitis are the direct result of labyrinth suppuration and are amenable to surgical treatment, especially during the earlier stages or stage of serous meningitis. On the other hand the localized forms of meningitis, excepting the outer pachymeningitis of Koerner, point rather against labyrinthine suppuration as a cause.

A further illustration of the frequency of labyrinth affections as a complication of chronic middle ear suppuration is shown by the fact that Alexander and myself found in the Vienna Clinics during a period of six months ending March 1st, 1908, that twenty-seven per cent. of all cases of chronic middle ear suppuration admitted for operation showed some pathological condition of the labyrinth; these were divided into seven types:—

1. Labyrinth hyperemia with increased reactibility of the static labyrinth.
2. Acute diffuse serous labyrinthitis.
3. Acute diffuse suppurative labyrinthitis.
4. Acute circumscribed labyrinthitis.
5. Chronic labyrinthitis with the formation of cicatrical tissue in the membranous labyrinth.
6. Fistula of the labyrinth capsule.
7. Perilabyrinthitis with sequestration of the bony labyrinth.

The acute suppurative labyrinthitis was found present in a fraction more than four per cent. This large percentage applies only to the cases of chronic middle ear suppuration which came to us for operation, and not to cases at large.

Symptoms of incipient or advanced meningitis were present in most

of the cases, which fact aids us in the differential diagnosis between suppurative and serous labyrinthitis.

In unoperated cases the serous meningitis may abate after a few weeks and the case recover; however, the great majority go over into the suppurative form. The rapidity of progress from one stage to the other depends upon many factors, including anatomical paths, virulence of the micro-organism and other things that we cannot go into now.

The mortality of eight per cent. from operation on the labyrinth, included cases operated upon late, with well advanced suppurative meningitis and one case with cerebellar abscess. All of the cases operated upon promptly recovered.

In regard to the explanation of the caloric reaction, Dr. Stickney suggests that the nystagmus may be due to a paralysis when cold water is used and to stimulation when hot water is used. This was the original view, but has been abandoned by all except Neumann. Neumann believed that the caloric reaction was similar to the galvanic reacton. For instance, the anode to the right ear produces an electrotonus of the right side, while physiological tonus of the left side overbalances and produces a rotatory nystagmus to the left. In the same manner, cold applied to the right ear suppresses or paralyzes the right side, producing a rotatory nystagmus to the left. In the same way he compared the reaction of heat to the stimulating effect of the cathode. Those who have followed my paper closely cannot have failed to see this mistake of Neumann's.

The caloric and galvanic reactions are entirely different. The galvanic reaction constantly gives the same nystagmus in all position of the head; logically it should be so, and practically it is so. On the other hand the caloric reaction gives a different nystagmus in different positions of the head.

A fact that still more conclusively contradicts Neumann's paralyzing and stimulating theory is the production of a horizontal nystagmus to the same side by cold water when the head is inclined to the lateral position. In other words, syringing the right ear with cold water with the left side of head to the left shoulder produces a horizontal nystagmus to the right; a thing that could not happen if the right side were paralyzed either by the application of the anode or by any destructive pathologic process involving the vestibulum or the vestibular nerve. The nystagmus lasts for a period which depends upon the temperature of the water used. As the nystagmus slightly precedes the vertigo, very slight degrees of it may be noticed. The patient may vomit. As soon as I notice the nystagmus produced by cold water, I immediately follow it with hot water. In closing the subject, permit me to emphasize certain points; go carefully in every case of middle ear suppuration with repeated heavy attacks of vertigo, for the prognosis is more favorable in operated cases than in those cases where an incomplete operation is performed.

CONSERVATION OF FUNCTION IN THE SURGICAL TREATMENT OF CHRONIC SUPPURATIVE OTITIS.

BURTON HASELTINE, M. D.,

Chicago, Ill.

IN presenting this subject I would specifically exclude all acute conditions, whether tympanic or mastoid. It is true that the procedure which I shall discuss has been recommended for acute mastoiditis but this seems to me unjustifiable, for reasons which will later appear.

I would likewise exclude all the so-called complications of otitis media such as intracranial, and labyrinthine disease, sinus infection, tegmental necrosis, Eustachian pyosalpinx and cholesteatoma. It is possible even that certain of these conditions may some time be met with measures less radical than at present, but just now no one would care to advocate other than our well recognized procedures.

Cases of chronic suppurative otitis media may be divided into three groups: 1st.—Those in which there is good prospect of cure by nonsurgical or simple surgical means in a reasonable time with preservation of fairly useful function. By simple surgical measures I mean those directed to the nasopharynx or to the ear itself through the external auditory canal. This does not include ossiculectomy, for I believe with our present knowledge this operation for suppurative otitis must be absolutely condemned.

2d.—Those which present strong evidence of being incurable by any other than surgical measures. Such of course are the cases presenting any of the complications above mentioned; also those in which thorough nonsurgical treatment has been faithfully tried without success.

3d.—Those cases not clearly surgical but in which a nonsurgical cure, if possible at all, can be accomplished only by a prolonged, tedious, perhaps painful course of treatment with prospect of seriously impaired function and with great liability to relapse.

This grouping is of course somewhat artificial. But the experienced otologist, given a complete history and a chance to study any case for

a brief time can usually classify it with considerable accuracy. The first is a large group, the second much smaller, while the third is probably the largest of all. The second group concerns us to some extent, but it is the third group which is especially to be considered. To these patients we have heretofore been able to offer only a choice of two procedures—really a choice of evils: first, the prolonged treatment mentioned above with its uncertainty as to results; second, the radical operation. Now the radical tympanomastoid operation is in some respects a surgical triumph. For certain definite conditions it has been and will continue to be our great reliance. But for such cases as we are considering it falls short of the ideal in several important respects.

1.—It is a prolonged surgical procedure rather severe for the patient and more or less difficult for the surgeon.

2.—There is an element of danger to important structures, especially to the facial nerve and the semicircular canals.

3.—It involves a somewhat tedious period of after care, possibly including secondary surgical measures such as skin grafting or curetting of granulations.

4.—There is an uncertain but not inconsiderable percentage of failures to cure. This has been estimated as high as thirty per cent., and probably is not less than ten per cent. among various operators.

5.—It offers very little hope of restoring function, and many times leaves it permanently worse than before the operation.

Manifestly there is need for a measure which we can more heartily recommend to patients of this group, and this need seems to be supplied by the operation which is the subject of this paper. To call the operation by any name is to invite censure, for already it is popular enough to excite jealousy; but its principles we can perhaps discuss without acerbity. It is based upon a theory essentially different from the one underlying the radical operation.

We have heretofore regarded the entire tympanic and mastoid contents as offensive in obstinate suppuration, and have thought it necessary to sacrifice them with no regard for possible function.

Mr. Heath of London has shown this idea to be erroneous and I think we must give him due credit whether or not we call the operation by his name.

He maintains that the focal point of disease in these cases is not in

the tympanic cavity but in the mastoid antrum which, being an undrained cavity inaccessible for treatment, is unaffected by any measures directed to the middle ear. The necrotic process is thus continued with the cavum tympani simply a cesspool for this mastoid sewage. He advocates the removal of all disease from the mastoid antrum and cells, with the opening of the aditus and without disturbing the ossicular chain or drum head. The focus of disease being thus removed and perfect drainage established, the middle ear structures tend to return to normal with comparatively little treatment.

The logic of Mr. Heath's reasoning is strongly appealing and the truth of many of his observations is apparent to everyone experienced in mastoid surgery. His published reports are well known and they have been subjected to a wide range of criticism.

Making, perhaps, some allowance for enthusiasm, I regard them as extremely valuable. He is certainly not justified in advising the operation for *acute* mastoiditis for the reason that we have simpler, safer and in every way better methods of treating this condition. I believe too, that in some of his reported cases cures might have been effected without resort to any mastoid operation. I have even a haunting suspicion that there have been difficulties and disappointments in his experience that are not fully detailed in the reports. But the majority of his cases are clearly such as we would include in group three and his results surely command attention.

Without following his method closely but applying the same principles, I have tried the modified operation eight times and the results are shown by the accompanying clinical reports.

Records of others' experience are as yet exceedingly meager. Several English operators have tried the procedure but, as far as I know, nothing regarding it has appeared in Continental literature. I have seen only one paper upon the subject by an American, that of Dr. W. L. Ballenger in the *Illinois Medical Journal* for March. In the section of Laryngology and Otology at the meeting of the American Medical Association held in Chicago this month Dr. Ballenger again presented the subject, giving his results in fifteen cases. These were exceedingly satisfactory, except in one where an epidural abscess necessitated a subsequent radical operation. In the discussion which followed no one claimed much experience with the measure except Professor Jansen of Berlin, and his operation proved to be widely different from the one

described by Dr. Ballenger and called by him the meato-mastoid operation.

With a desire to learn more of the opinions of others I recently addressed a letter of inquiry to one hundred prominent otologists in different cities of this country with the following results:—

In twenty-nine instances no replies were received.

Seven replied that they had made the operation a few times and expressed satisfaction with it.

One had tried it fourteen times, chiefly with disappointing results.

Fourteen had not performed the operation, but had definite views as to its value. Five of these thought it might be useful in suitable cases while nine were strongly opposed to it.

Forty-nine either knew nothing of it or had some misapprehension as to its nature.

From several of the most instructive replies I have made extracts which are herewith appended. Although nearly half of these inquiries were sent to specialists of the homœopathic school only two were found who had tried the method, and one of these had only used it once. As we are especially averse to destructive surgery and this is distinctly a conservative measure I feel that it should receive a larger share of attention from our members.

All correspondents agree that the method is applicable only in selected cases. This selection of cases is obviously a difficult matter and a much larger reported experience is necessary before any positive rules can be given.

I am inclined to differ rather widely from others on this question of indications although I agree with one correspondent that in doubtful cases a final choice of operation is best deferred until the diseased area is exposed. This is perfectly feasible, since the preliminary steps of the two operations are the same.

The general opinion seems to be that the operation should only be tried when a considerable amount of drum head is present, the perforation being small enough to offer some hope of subsequent closure. Stress is laid by both Heath and Ballenger on the size and location of the perforation as denoting the character of the intratympanic disease. High marginal perforations, especially in Shrapnel's membrane, suggest attic necrosis and are thought to contraindicate the operation.

I doubt the correctness of this view for I have three times employed

this procedure in spite of undoubted attic disease, and these have really been my most satisfactory cases. In two of these there was complete loss of drum head and no hope of restoration, but the ossicles were present and with the cessation of the discharge the hearing improved to a remarkable degree. This was with the thorough use of the attic syringe, as I have described under technique. Attic douching I deem essential in such conditions, and I would not hesitate to enlarge a small perforation if necessary for this purpose. The restoration of the natural drum membrane is highly desirable, but my experience shows that it is not at all necessary to the recovery of useful function.

The point made by another correspondent as to the age of patients is, in my judgment, extremely valuable. It has always been with the greatest reluctance that I have performed the radical operation upon a child or a young adult. The conservation of function in these patients, especially in bilateral disease, is of tremendous importance. The frequency of attic necrosis in children and their greater reparative power render them especially good subjects for this conservative measure. It should be remembered, however, that perfectly satisfactory after care cannot be given children too young to exercise some measure of self control.

To sum up, I believe from the data now available we may claim the following advantages for this operation, where it can safely be substituted for the radical:

1.—It is a shorter and milder operation, involving less technical difficulty.

2.—It endangers no important structures, such as the facial nerve and the semicircular canals.

3.—The period of healing is briefer, with no need of secondary measures such as skin grafts.

4.—It offers hope of greatly improved function, even better than can be expected from a nonsurgical cure.

If this be true, it means that we can offer these patients something even better than a cure without operation where that would require a long course of treatment. It removes, too, the last vestige of excuse for letting aural suppuration go uncured, and such a case becomes a reproach to someone's ignorance.

Against the disadvantage of possible failure to cure we have these two considerations—1st, that even the radical sometimes fails. 2d,

that a radical, if subsequently required, can on account of this previous operation be more easily and safely performed.

In conclusion let me say, I know that an apology should accompany the expression of any opinion based upon this meager experience. But in presenting this report along with these expressions of opinion from others I desire merely to arouse more interest in what I believe to be an important advance in otological surgery.

TECHNIQUE.

The Operation.

1.—Administer a general anesthetic and prepare the patient as for a radical operation.

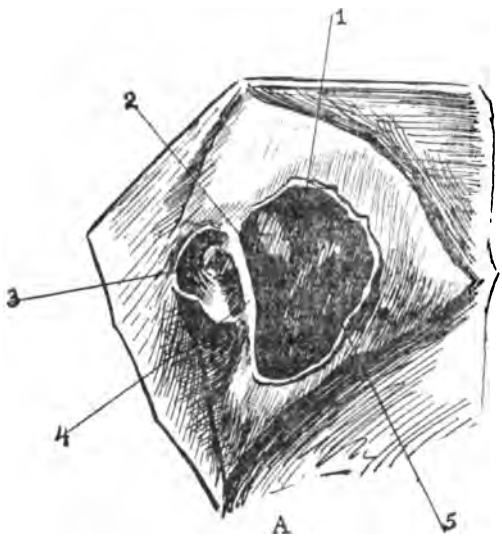

Fig. A.—First step of operation completed, showing exenteration of mastoid antrum and cells. 1, floor of middle fossa. 2, opening of aditus e tympano ad antrum. 3, drum membrane showing perforations. 4, posterior wall of bony canal. 5, location of sigmoid portion of lateral sinus.

2.—Make the same incision as for a radical operation, preserving the periosteum and exposing the same area of bone.

3.—Detach the posterior soft canal freely down to the annulus, to expose the middle ear, but with great care not to injure the drum head or disturb the tympanic contents.

4.—Open, explore and completely exenterate the mastoid antrum and cells, and smooth the walls with the same thoroughness as in the radical operation.

5.—Locate the aditus ad antrum and enlarge it as much as possible without disturbing the attic structures. This is an exceedingly important point not mentioned in any description I have seen. The walls of the aditus should be curetted away to the fullest extent, since upon the size and subsequent duration of this opening the entire success of the operation may depend. To do this without entering the attic is a matter of some delicacy. The use of adrenalin at this point will greatly help in obtaining a bloodless field.

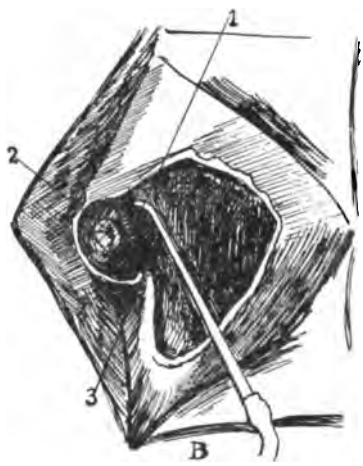

Fig. B.—Second step of operation completed showing bony wall removed down to annulus tympanicus and cannula inserted into aditus. 1, cannula. 2, drum membrame. 3, facial ridge.

6.—With the Politzer bag and special cannula force blasts of air through the enlarged aditus until all accumulated secretions and debris are blown through the perforated drum head into the external canal. At this point the perforation may be enlarged by an incision if necessary. I believe the cleansing is more thorough if sterile water is forced through and followed by air blasts. I see no objection to this, provided due gentleness is shown.

7.—Protect the drum head and aditus with delicate cotton pads and remove the posterior bony canal down to the annulus tympanicus. The

removal should be vertically wide, giving if possible a smooth floor to the combined cavity.

8.—Prepare a flap, *not by splitting the posterior half of the soft canal,* but free it intact from the anterior half by two long incisions in the top and bottom. Extend these incisions well out to the external meatus so that the half tube thus liberated can slip backward without tension and line the posterior wall of the cavity. The healthy cellular and fibrous tissue of the posterior canal is not removed but left to as-

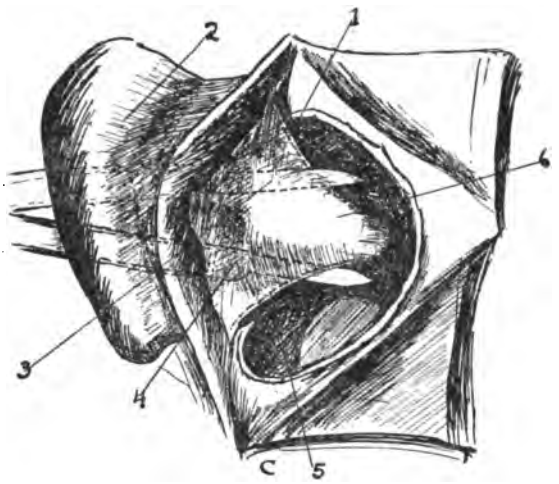

Fig. C.—Preparation of flap from posterior soft canal. 1, upper line of incision. 2, auricle. 3, scalpel in position for making upper incision. 4, scalpel in position for making lower incision. 5, lower line of incision. 6, tongue flap which is to form posterior lining of cavity.

sist in filling the mastoid space, leaving less of a pocket to impede drainage.

9.—Insert sutures to close the external incision including the periosteum. When ready to tie the sutures remove the cotton pads, clean away all debris and put a large ear speculum into the meatus. Under reflected light the posterior flap is now pressed backward and upward to line the mastoid space and firmly held in place by a strip of gauze inserted through the speculum. This must reach all the way to the tegmen antri which can readily be seen. It must be pressed backward to obliterate all dead space between the flap and the bony wall. It is not necessary to put a drainage into the deep auditory canal although

this may be done if preferred. As this packing is inserted the sutures are tied by an assistant. This places the flap in a better position than can possibly be done by any anchor sutures, which have a tendency to draw it away from the deepest part of the cavity where it is most needed. The external dressing is the same as for a radical operation.

After Care.

The proper after care of these cases is a matter of the utmost delicacy and is fully as important, I believe, as the technique of the operation itself. The patient is allowed to sit up as soon as nausea has subsided and food can be taken. At the end of forty-eight hours the inside packing is gently withdrawn, the Eustachian tube inflated by Politzerization and all secretions removed by gentle swabbing through the external meatus. The special cannula is then inserted into the aditus through the mastoid cavity and air blasts are sent through the tympanum.

The gauze is replaced but only in the form of a light drain, without packing it as before. This dressing is repeated daily, the gauze drain being omitted after three or four days. The air douche is continued till the aditus closes by granulation, which will occur usually within a week or ten days. The swab must be inserted all the way to the tegmen antri each day until the antrum becomes obliterated, as there is a tendency to closing off of a dead space above. While the air douche is no doubt sufficient in many cases, I have no hesitation in using the attic syringe with suitable solutions where more thorough cleansing is needed, following it with air, preferably through a heater.

I believe that the air current should follow all washing of mucous cavities, and my own practice is to use the heated air filtered through formalin gauze.

If the discharge rapidly lessens and the drum head shows signs of healing, the attic douche should soon be discontinued. Where no drum head is present it may be used as long as any discharge remains. The posterior incision requires no attention except the removal of sutures when union is sufficiently firm.

CLINICAL REPORTS.

Case 1.—Young man, laborer, with suppuration of left ear for several years. He could not give a very intelligent history. He had been

treated at various times and places, probably not thoroughly. There was profuse, foul discharge that did not change with daily treatments for a week. About one-third of the lower part of drum head was absent. There was no hearing for the watch on contact. As he could not have continuous treatment he consented to an operation. The mastoid antrum was necrotic but there was not extensive involvement of the cells. The air douche was not used following the operation, as this was before Heath published his reports and the idea had not been suggested.

All discharge ceased except a slight clear mucus. Hearing for the watch improved to three inches. The patient disappeared from observation five weeks after the operation.

Case 2.—Young lady twenty-two years of age with suppuration of right ear since two years old. She had been treated almost continuously. The discharge was profuse and foul. The hearing was one inch for the watch. No drum membrane was present. The malleus head was visible, but the long process was gone. Operation disclosed a pool of liquid pus in the mastoid as large as a small olive, with eburnification of nearly all cells around the area. Aditus very small and obstructed by a mass of necrotic tissue which seemed to fill the entire attic. A quantity of such material was washed into the external auditory canal by a current of water injected through the aditus. Gauze drains were inserted both into the aditus and into the cavum through the deep canal.

The aditus was closed in six days and the discharge rapidly lessened, but for several weeks there appeared on the anterior tympanic wall a small amount of thick yellow pus. This I at length traced to a small necrotic pocket in the extreme anterior part of the attic. I cauterized the area and syringed with alcohol daily for ten days, when all discharge had ceased. The hearing in this ear showed improvement within one week after operation both for the voice and for the watch. Six months later there was no return of the discharge and the watch was heard eight inches.

Case 3.—This is the one instance in which I have been compelled to make a subsequent radical operation; the history is most instructive as showing the various elements contributing to this failure.

The patient was the same as case 2, with suppuration of the left ear for twelve years, subjected to the same treatment. The discharge

from this side was profuse but without odor. Upper half of drum head was present, with malleus handle shortened and anchored to the inner tympanic wall and granulations showing along the margin. Hearing variable but never better than light contact for the watch. Patient regarded this as much the poorer ear.

Operation revealed extensive disease in mastoid cells with many granulations and an especially large mass filling the antrum. When the attic was douched another mass was washed out into the external canal. The bone covering the lateral sinus was necrotic and the membranous wall was exposed over a considerable area.

In removing the posterior canal wall I inadvertently cut all the way through to the aditus but as the opening was small I disregarded it and proceeded in the usual way. This was probably an error in judgment for the later difficulty in maintaining attic drainage I ascribed partly to this fault.

There was extremely little pus following the operation and the hearing was astonishingly better when the first dressing was removed. This continued for ten days or until after the closure of the aditus. It then suddenly grew very much worse and I discovered that the entire remnant of drum membrane had adhered to the inner tympanic wall and the attic was filled with fluid. I cut away this adhesion and released a quantity of perfectly clear serum. The hearing improved immediately and remained good except when other adhesions formed to obstruct drainage. By the use of the cannula I maintained an opening to the attic for five weeks, a very slight serous discharge persisting. The hearing remained about ten inches for the watch, this ear being somewhat the better of the two.

At this juncture the patient was compelled to leave the city, and for three weeks the ear received no treatment except such cleansing as she could give it.

On the nineteenth day she noticed a considerable loss of hearing on that side and on the twenty-second day she had a chill with nausea and slight vertigo, followed by dull pain and tenderness in the mastoid region.

I saw her the following morning, when she complained of moderate sore throat and dull pain over the entire left side of the head. There was complete anorexia, coated tongue, diffuse pharyngitis, with temperature 102.5° F. and pulse 96. There was a slight purulent dis-

charge from the right Eustachian tube and considerable excoriation about the meatus. The nares were also somewhat inflamed, and there was moderate coryza. A bluish red discoloration showed behind the left auricle in the area about the scar and there was slight œdema but no fluctuation. Careful tests were made for labyrinthine involvement which was excluded by the absence of vertigo and nystagmus as well as by the slight functional impairment. No cerebral symptoms could be discovered and there was no tenderness over the jugular. Inspection of the middle ear showed nothing significant. A probe inserted into the attic released a few drops of clear serum after which the hearing was as good as ever.

The patient was rapidly prepared for operation and the left mastoid reopened through the former incision. The fibrous tissue in the mastoid space was edematous but no fluid pus was found. The lateral sinus was uncovered and explored and found normal. A moderate amount of granulation tissue occupied the attic and seriously obstructed drainage. This was removed, together with the malleus and incus, both of which were in a good state of preservation. The remaining steps of the radical operation were rapidly performed and the wound closed with both anterior and posterior drainage. It was gratifying to see how little time was required for this entire procedure.

The temperature fell two and one-half degrees within six hours after operation, but the following day an unmistakable erysipelas appeared simultaneously in both auricles and in the alæ nasi. This rapidly spread to the entire face and scalp with the characteristic constitutional symptoms. An examination of the secretions showed streptococci in abundance. The infection was combatted by vigorous measures and on the fifth day the temperature subsided. The patient showed considerable exhaustion, but made a good recovery and was out of bed in fourteen days.

The healing process seemed to be in no way hindered by the superficial infection but the hearing in the left ear is by no means as good as before the last operation, being about the same as before any operation was made, as usually follows the radical. It is interesting to note that there was no recurrence of the suppuration in the right ear and no impairment of its function. This would seem to be a fairly good test of permanency.

Case 4.—The history of this patient is in many respects the most

interesting I have to report. A boy twelve years old had had suppuration of both ears since two years of age. This had been treated almost continuously. I had treated him myself for about three months, when he was eight years old, with no result and had suggested operation which had been declined because I could not promise improved hearing. I then referred him to another specialist, more convenient to his home, who saw him almost daily for several months without results. After an absence of several years he returned to me with a request for operation. In the interval he had been almost constantly treated by various otologists, but the hearing had steadily diminished until the school authorities had dismissed him, with the suggestion that he be sent to an institute for lip reading.

I found it impossible to converse with him except by speaking within two feet of the ear in a tone considerably louder than that of ordinary conversation. He could not hear the watch on the firmest pressure, there being no appreciable difference between the two ears.

Bone conduction was good in each side, with Rinnè, of course, markedly negative. Each ear was discharging pus without odor and each showed ossicles present with a loss of something more than the lower half of the membrane.

I decided to try the new procedure, which I did on the left ear, March 23d, 1908. Five days later I operated on the right ear. The gross pathology was the same on both sides, there being infection of all the mastoid cells with the aditi small and blocked with granular debris.

We now come to the most interesting feature of this case. I completed the first operation as I intended, but in the second I accidentally dislocated the malleus while cleaning debris from the attic, and was therefore compelled to make a radical operation. We thus had a radical operation on one side (the right) and a conservative on the other in a patient with the two ears identical in history, pathology and function.

In six weeks the boy was back in school hearing conversation without difficulty, and with the left ear dry. The right was about two weeks longer in healing. The final result was hearing for the watch one inch in the right ear and about eight inches in the left which is the ear he depends upon for ordinary use. Rinnè remained negative on both sides, although much less pronounced than before operation.

This is an unusually good result in the right ear from the radical operation, and there is no reason to suppose that the left ear would have been better than the right, subjected to the same treatment. We may conclude therefore that the modified operation has saved this boy from a serious degree of deafness for the remainder of his life.

Case 5.—This case, a young woman with otorrhea for eight years, is the only one thus far in which I have been able to get restoration of the drum head as reported by Heath in so many cases. It is also the only one in which loss of membrane was slight enough properly to be called a perforation. About one-sixth of the lower and back part was absent, with the ossicles apparently intact. The discharge was moderate in amount but very foul. A pool of foul pus was found in the mastoid antrum but the cells were not badly involved. The air douche was used after operation for five days, but the attic syringe was omitted. There was little discharge after operation and the perforation closed in five weeks with improvement in hearing for the watch from three to fourteen inches. A negative Rinnè changed to a positive in this instance, as is probably to be expected with complete restoration of the drum head.

Cases 6, 7, 8.—These three cases were in all respects similar to case four, except that in one the entire malleus showed in normal position, while the membrane was almost entirely absent. The results as regards function are even better than in my previous cases but they are perhaps too recent for final judgment as to their permanency. In one there is a positive Rinnè without closure of the perforation in an ear distinctly negative before. This seems to me remarkable and shows, I think, a surprisingly healthy middle ear.

The period of healing was somewhat shorter in these than in the previous cases, in one being less than four weeks. This I attribute to improvement in my technique, especially in the after care.

The daily drying with the warm air douche through the special cannula I believe to be of considerable value.

100 State Street.

EXTRACTS FROM CORRESPONDENTS.

"My experience is confined to but two cases, so far. These were very satisfactory and I believe that the operation is one which will be generally accepted for a certain class of cases in lieu of the more radical operation."—F. Gurney Stubbs, Chicago, Ill.

"My experience with this method of operating has been limited to six cases. From this limited experience I believe that it has a permanent place in aural surgery, but that this place depends upon the selection of the cases—I mean by selected cases those cases in which there is no involvement of the attic.

"My chief objection to this method of operating is that I cannot believe that it is good surgery to leave a pus discharging middle ear with granulations and necrosis when finished and trust to drainage, but as the Heath operation can be changed to a more complete operation at any time a small part of this objection is done away with."—Frederick K. Sidley, Peoria, Ill.

"For the past two years, I have almost entirely followed in acute and chronic suppuration Heath's modified or conservative method and with the best results, both as regards relieving the suppuration and retaining serviceable hearing. I think it is a tremendous advance over the old radical in most cases."—William H. Phillips, Cleveland, O.

"I think the better term for this operation is the meato-mastoid operation, suggested by Ballenger. The cases in which I have employed this procedure have varied from chronic suppurative otitis with mastoid involvement of many years' standing to mastoiditis of recent origin.

"My conclusions are that it is an excellent operation in chronic cases where it is probable that the function of the ossicles can be preserved or restored, and in the acute and subacute cases in which the operative cavity is not large so that it will drain readily through the meatus. The results have been entirely satisfactory, except in one or two cases where I did this operation when I should have done the radical. I think, however, it is an operation which should be determined upon only after the parts are exposed and their condition ascertained."—Albert H. Andrews, Chicago, Ill.

"Its usefulness, as far as my experience goes, is confined to cases in the very young. To date I have operated fourteen cases of subacute and chronic otorrhea with the following results:

"Ten cases in adults and four in children, the youngest of which was two years and the oldest seven years of age. All the adult cases but one have been failures. This one was a perfect success. Children

cases all successful. The cases were not selected, though all heard fairly well before operation and all improved after the operation, especially the children. I believe that the great difficulty in this procedure is to know what the condition is in the aditus ad antrum and attic, as well as the middle ear. If we could determine that before operation, or if we will make up our minds beforehand that we will do a second operation in case the first one fails, then this so-called Heath operation would be a good thing. I hope that I may change my mind about this as time goes on for I will certainly continue to do the operation for some time to come."—Joseph C. Beck, Chicago, Ill.

DISCUSSION.

G. W. MACKENZIE (Philadelphia): My experience with the Heath operation is so limited that I shall confine my remarks to the theoretical rather than to the practical side of the question.

In every operative case the first object of the surgeon should be to save the life of the patient; the second object to conserve the hearing. In either event an exact diagnosis is essential. When we can safely exclude complications endangering the life of the patient we may then turn our attention to the best operative procedure to conserve the hearing.

I agree with Dr. Haseltine that the best radical operation to accomplish this is the Heath operation. This operation has the further advantage of being easier to perform and quicker to heal than the Zaufal, Stacke or Kuster-Bergmann. The difficulty lies not in the operation but in the selection of the cases. In this connection I will briefly enumerate some of the more important indications and contraindications for the operation, including those given by Dr. Haseltine.

Indications.

1. Comparatively good hearing with lengthened bone conduction.
2. A circumscribed chronic antrum or antrum-mastoid suppuration as indicated by: (a) A perforation in the posterior upper quadrant; (b) Intact and normally movable ossicles, as determined by the use of Siegel's speculum or the sound.
3. A normally reacting labyrinth.

Contraindications.

1. Greatly impaired hearing with shortened bone conduction and diminished perception of high tones.
2. A perforation in the anterior lower quadrant, with pyorrhea of the Eustachian tube.
3. Attic suppuration, with more or less destruction of the ossicles or lateral attic wall.

4. Cholesteatoma.
5. Recurring polyps, especially in the region of the promontory.
6. Labyrinth involvement—hyperemia, serous or suppurative inflammation of the labyrinth, perilabyrinthitis, fistula of the labyrinth.
7. Symptoms, even though slight, of intracranial complications.

J. M. PATTERSON (Kansas City): I saw this operation about a year ago for the first time and was so pleased with the fact that it greatly simplified matters, that I tried it on the next suitable case I had. I have only tried it on this one case, but the results were extremely satisfactory both as to the cure of a chronic suppuration and as to the saving of the hearing. Even if it were no better in regard to the saving of the hearing, the fact that it simplifies the mastoid operation appeals to me. We do not have so many cases of mastoid in this country as they have in Europe and it is an advantage, when one does occur, to have the operation simplified. The result is not always satisfactory, but that is also true of the radical mastoid operation. Some of my friends have performed it a number of times and found it on the whole as satisfactory as the usual radical operation.

I have seen it performed in three cases for mastoiditis with success, in which I believe hearing would have been lost under the radical mastoid operation. Two cases in which the ossicles had been removed by New York surgeons came into my hands for after-treatment and I believe that with this operation there would have been better results.

DR. MACKENZIE: Were these cases operated on for acute mastoiditis?

DR. PATTERSON: One was an acute case, the other subacute.

DR. MACKENZIE: I think nearly all authorities agree with Dr. Haseltine that acute mastoiditis should never be operated upon radically. The Heath operation is only a modified radical operation, and is not applicable to acute cases. I think, therefore, that it should be made plain that this operation is valuable as a substitute for the radical operation only in chronic cases.

DR. HASELTINE: It is a perfectly feasible thing to leave your final decision as to the character of the operation which you will do, until you have exposed the field of operation; all the conditions can then be seen and you can determine what is best under the circumstances. It should not be necessary for me to repeat that neither of these operations is justifiable in a case of acute mastoiditis.

SECOND-RANK REMEDIES IN THE HOMŒOPATHIC TREATMENT OF AURAL DISEASE.

HOWARD P. BELLOWS, M. D.,

Boston, Mass.

ONE year ago I had the pleasure of presenting to this society, at the request of its President, a paper entitled "Sheet-Anchors in the Homœopathic Treatment of Aural Disease." This paper dwelt upon the pathogenic action and therapeutic use of seven of our most commonly employed and trustworthy remedies in aural practice. These remedies were belladonna, pulsatilla, mercurius in its various forms, hepar, silicea, kali muriaticum and strychnia. The evidences of appreciation which were kindly accorded to this paper, at the time of its presentation and subsequently, and the interest which it seemed to awaken in therapeutic measures relating to the ear, have induced me to pursue the same subject further in the present paper. I therefore present today for consideration another group of remedies which are employed less frequently in aural practice than those which were designated as "Sheet-Anchors," but which exhibit an equally distinctive action upon the organ of hearing and are entitled to a position in the second rank of importance.

PICRIC ACID.—The principal action of this remedy, as regards the ear, is upon the external auditory canal, and the particular condition to which it is adapted is furunculosis. Personally I prefer belladonna in the incipient stage of this affection in almost all cases, and sulphur to prevent recurrence, but picric acid, in both acute and subsequent stages, has its strong advocates in our school. There is a condition of the external canals, however, which is occasionally met with, which is characterized by excessive irritability of their entire surface, with dryness, itching, burning and sometimes pain. Exfoliation of the cuticle occurs at times. The whole disorder lasts over several days and recurs at irregular intervals for years if unchecked. In this condition I have found the picrate of lime—the so-called "calcarea picrata"—of very great service, not only in relieving the acute condition but in preventing its recurrence. I have always used this remedy in the sixth decimal trituration.

GRAPHITES.—The action of this remedy also centers about the external auditory canal, as regards its influence upon the ear. In eczematous conditions of the meatus it is peculiarly applicable. When these assume the chronic form we are often led to the choice of graphites by a general dryness of the skin in the various parts of the body, by brittleness of the finger nails, cracking of the finger ends, chapping of the lips and excessive dandruff upon the scalp. When cracks and fissures occur behind or below the auricle this remedy may even be applied locally to advantage, mixed with vaseline in the proportion of one part to ten. In catarrhal deafness of the sclerotic type, with dryness of the tissues, it is sometimes of service, particularly if marked improvement of the hearing in noisy places, or while riding in a carriage, is very prominent among the patient's symptoms.

MEZEREUM.—This remedy is also applicable to eczema of the external canal, as is arsenicum, and both these remedies are useful where neuralgic pain about the ear is a source of much annoyance. There is a certain condition of the external canal and middle ear, however, to which this remedy is particularly applicable and in which, without the aid of this remedy we would be quite at a loss in our effort to afford relief. I refer to the annoying condition of hypersensitiveness in which cold air, and especially a cold wind, seems to penetrate the ear and blow directly upon the drumhead, the sensation being as if the ear were "too open." Time and again I have relieved this condition in my patients and stopped the recurrence of this sensation by the administration of mezereum in the sixth decimal dilution.

MAGNESIA PHOSPHORICA.—In aural neuralgia, especially neuralgia of the tympanic plexus, this remedy is, in my experience, more generally useful than either arsenicum or mezereum. It helps in conditions where the local application of dry heat gives temporary relief, and this may well be used in conjunction with the remedy during the height of acute attacks. This remedy has offset the tendency to recurrence and afforded permanent relief, perhaps after two or three diminishing attacks, in many cases which have been under my personal observation. I have always used the sixth decimal trituration of this remedy.

BRYONIA.—Leaving the external ear and aural neuralgia we find in the middle ear a condition, apart from the ordinary inflammatory states, which merits a brief consideration. I refer to the practically painless

accumulation of mucoserous fluid within the tympanitic cavity which occasionally occurs, and to the disturbance of hearing and annoying local sensations to which this condition gives rise. Here bryonia has seemed in my practice to be of decided benefit, in a number of well marked cases in promoting the resorption of the accumulated fluid. A close second to bryonia in this condition is mercurius solubilis.

HYDRASTIS.—Many of the catarrhal states of the middle ear in their early stages are induced by catarrh of the nasopharynx, and in their later course are closely associated with and strongly influenced by the condition of the pharyngeal vault. In this class of cases, when the mucous secretion in the nasopharynx is very profuse and bland and easily expectorated, but with a sense of local fulness and of retained accumulation remaining, I find hydrastis a very useful remedy—affecting the nasopharynx directly and the ear and hearing indirectly. The form of the remedy which I prefer in such cases is the muriate of hydrastin, in the third decimal trituration. In suppurative discharge from the middle ear the same remedy is of service when the secretion is profuse, distinctly mucopurulent and comparatively bland in character.

KALI BICHROMICUM.—Closely associated with the foregoing in its therapeutic action is the bichromate of potash, but the character of the discharge serves to differentiate the two. The well known stringy and tenacious mucus characteristic of this remedy may be encountered both in the nasopharynx, in catarrhal affections of the ear, and in the tympanum in suppurative disease. In the latter case the tissues are much more irritable locally than in hydrastis cases, and more liable to bleed and to form adhesive crusts. Locally, in saturated aqueous solution, the bichromate of potash is exceedingly useful as an application to new granulations within the suppurating ear which tend to the formation of aural polypi, and to the stump of polypi, after removal by operation, to prevent recurrent growth.

CALCAREA.—When the tendency to the formation of aural polypi is marked and persistent, calcarea carbonica or iodata, administered internally, has in many instances seemed to me to be of decided service in improving the local as well as the general condition. Calcarea phosphorica has long been a favorite with me, as with other aurists of our school, in cases of catarrhal deafness in ill-nourished children with flabby muscles and soft hypertrophy of the tonsils.

TELLURIUM.—A peculiar local condition, consequent upon chronic

suppuration of the middle ear, is occasionally seen where the remaining surface of the perforated drumhead presents little vesicular or phlyctenular eminences upon a chronically inflamed and dusky red base, while the discharge from the ear is watery, excoriating and fetid, the odor being that of "fish pickle." The classic internal remedy in our school for this fortunately rather infrequent condition is tellurium, and in two or three instances it has apparently worked well in my hands.

CAPSICUM.—A consequence of suppurative disease in the middle ear which is of much more frequent occurrence is the extension of the inflammatory process, either in acute cases or in the acute exacerbation of chronic cases, from the middle ear to the mastoid process. In addition to the local maintenance of a cold temperature by means of the Leiter coil, and the establishment of free drainage from the middle ear, it is customary to exhibit belladonna internally, or possibly ferrum phosphoricum. Cases have occurred, however, in my practice and in that of my colleagues, where these measures were not attended with the desired result in the subsidence of pain and local tenderness, when the situation has yet been saved and an operation averted after the administration of capsicum internally. I employ the third decimal dilution in these cases and prepare it freshly from the tincture.

FERRUM PHOSPHORICUM.—In addition to the use of this remedy which has just been referred to, it has apparently been of much service to me in several cases of labyrinthine hyperemia. The characteristic hammering in the ear, synchronous with the pulse beat, helped to the choice of the remedy, which was used in the third decimal trituration.

GELSEMIUM.—To this remedy we turn with confidence in cases of disturbed circulation with marked determination of blood to the occiput and to the internal ear, with general fulness and tension of the head, distressing tinnitus, labyrinthine hyperemia and even local exudation. In so called Menière's disease it is almost invariably our first prescription, followed in later stages by silicea.

PILOCARPIN MURIATE.—In the labyrinthine cases which go badly, after severe attacks of grippe for instance, we are much limited in our resources and seldom get really satisfactory results. Pilocarpin is perhaps the best remedy we have, exhibited in doses just sufficient to induce marked increase of saliva and perspiration. Usually one, or one and a half, one-tenth-grain tablets, administered upon the tongue, are sufficient for the purpose, repeated three or four times a day, with

care in regard to exposure of the patient to cold or drafts while under the influence of the drug. Subsequent to this prescription strychnia phos., and the high-frequency current may help out the case.

PHOSPHORUS.—Chronic cases frequently occur in my practice where the patient improves in hearing the watch and all mechanical sounds, but shows little or no improvement by the vocal test or for conversation. I have in a number of instances seen improvement in this respect when the general measures of massage, etc., directed to the condition of the middlle ear, have been continued but the remedy changed to phosphorus.

SULPHUR.—The value of this remedy as an occasional intercurrent in the prolonged course of treatment of many chronic conditions is well attested. I often employ it in chronic aural cases when the response to an indicated remedy is not what I think it should be, or when some serviceable remedy seems to have lost its effect. After its exhibition for a week I have frequently seen the case again take an upward trend and the patient continue to improve upon the former remedy.

In closing I must remark that the remedies selected for discussion in this paper may have been chosen somewhat arbitrarily. There are certainly quite as many more which are used by me, and by all aurists of the homœopathic school, almost as frequently as the foregoing, and whose action upon the ear, both pathogenic and curative, is as well marked and reliable. All papers have their limit of time, however, and this limit precludes the consideration of any other remedies than these which, in my estimation, are most justly classed in the second rank of importance in aural therapeutics.

SYMPATHETIC OPHTHALMITIS.

JOHN H. PAYNE, M. D.,

Boston, Mass.

YOUR President had invited me to write a paper on Sympathetic Ophthalmia, but it seemed best, after consultation with him, to confine my remarks to Sympathetic Ophthalmitis, as a more definite and descriptive definition of the degenerative type of inflammation that I wish to speak about, in contradistinction to the mere sympathetic irritation that so frequently occurs; and, as I have had recent experience in two cases, one having been in consultation with our President, there has awakened in my mind an active interest in such cases, and a desire to know more about them.

My personal experience, I am happy to say, has been confined to these two cases, but as they apparently started from a similar cause, and proceeded along destructive lines with absolutely dissimilar manifestations and results, they would seem to offer a field for conjecture and speculation. This paper is written with the hope that others may be induced to share with us their elation of success, or their depression of failure in treatment of these cases, to our lasting benefit and to an elucidation of the best method of meeting such emergencies.

There seems to have been of late years little or no true advance in effective methods of treatment, if we except the magnet which is so frequently disappointing, though science has been more happy in meeting the requirements of other destructive and heretofore despaired-of ophthalmic complications, such as the opsonic treatment for purulent infiltration of wounds with involvement of the deeper structtures and threatened necrosis of cornea, a condition that is just as capable of developing a large sized heart disease in the attending physician as a hopeless case of sympathetic ophthalmitis.

As to the use of the magnet, experience has demonstrated that it has a very limited range of useful activity. Firstly, it is limited to those injuries by bits of steel that still remain imbedded; then again it is limited to certain kinds of steel that are being used less and less in the arts and manufactures and are distinctly magnetic. We must

then omit from our calculation those steels that are combined with the alloy of manganese, that are extremely hard and tough and are therefore used largely in important manufactures and are absolutely non-magnetic when combined in the usual proportion of manganese, iron, and carbon. This special steel is used now in the construction of tools, machinery, car wheels, rails, etc. There is another alloy that greatly reduces magnetic attraction, namely, chromium.

Again, in reviewing the literature of cases reported, I find that the use of the giant magnet is becoming less frequent in the removal of steel that has penetrated to the deeper tissues on account of the laceration accompanying too forcible withdrawal of it. And, when all is said and done, the fact remains that nearly 100 % of such cases treated in this way are eventually lost, although it is possible that the other eye is thereby saved from participation.

Some doubt exists as to whether the continued presence of the foreign body in the injured eye is of itself necessarily an excitant of sympathetic ophthalmitis, and therefore as to whether it might not in special instances be allowed to remain on the chance of its becoming encysted. This would seem to be almost too great a demand on the faith of the most optimistic individual.

I have, however, an instance in mind that occurred in my own practice several years ago, in which sight was lost by entrance of a splinter of steel which was not removed until ten years later, and that never occasioned even irritation of the fellow eye. The patient called upon me with the complaint that he had felt a pricking sensation in an eye that had been injured many years previously; upon lifting the lid and inspecting the eye ball I discovered a small black dot on the sclera well back toward the equator that resembled a cinder, and proceeded to remove it by forceps. Imagine my surprise to find myself pulling out from the interior of the eyeball a splinter of steel, one-half inch in length and perhaps one-sixteenth in diameter. The wound healed promptly and left no irritation of either eye. Reviewers of the literature of sympathetic ophthalmitis have claimed that fully 80 % of such have disclosed no foreign body in the exciting eye, but merely some wound at or near the ciliary region. My two cases that I will now proceed to describe come under this class.

The first was a boy, twelve years of age, who presented himself at my clinic November 4, 1907, with a bandaged eye and a history of

an injury from broken glass of the spectacles that he had been wearing in a mix-up with another boy who had been carelessly swinging an empty tin can. An examination revealed a partially prolapsed iris, a segment of the cornea at the superior sclerocorneal junction shaved off leaving a gaping wound, an anterior chamber partially filled with blood, and an entire loss of vision. The usual accompaniments of excessive photophobia and conjunctival hyperemia were present. He was admitted to the hospital, and an X-ray taken, followed by examination under ether. No foreign body having been detected, and it being possible to replace the iris, this was done, a pressure bandage applied and the case put to bed. The uninjured eye presented no irritation at this time. There being no pain or active discomfort, the pressure was kept up without removal for four days, when there was found to be less conjunctival hyperemia, less blood in anterior chamber, and practically no bulging of the iris, though it was still exposed opposite the segment of cornea that had been shaved off. Pronounced photophobia continued. The pressure bandage was reapplied and practically kept there for six days longer. An examination then revealed a bulging of the iris through the wound, and therefore an operation was decided on. This was done by button-holing the bulging iris, thus letting out a thin sanious fluid that was behind it and that was probably broken down vitreous; the edges of the corneal wound were scraped, and, it being impossible to accurately approximate them by a fine suture, a carefully adjusted pressure bandage was applied and the patient put to bed with instructions to lie on his back. This procedure was so successful that all bandages were omitted entirely three weeks later, and smoked glasses substituted, there having been meanwhile a repair of the lost corneal tissue that completely closed the wound, leaving a good looking eye, with but slight shrinkage of the corneal diameter, and a good looking iris with a completely closed pupil. The iris being very dark colored this defect was not very prominent.

Just two weeks later, on January 1, 1908, as I was about to sign his discharge from the hospital and admission to the out-patient department, there suddenly developed a hyperemia of the conjunctiva of the uninjured eye, much lachrymation, no pain or circumcorneal injection or oversensitiveness, accompanied by a watery nasal discharge and sneezing. I supposed it to be simply an ordinary head cold until two

days later, when there appeared a slight circumcorneal injection with some photophobia but no pain, slight haziness of the cornea, and, on dilatation of the pupil, several small posterior synechiæ that, however, quickly disappeared. I at this point called in Dr. Wells as a consultant. The pupil was kept well dilated for a few days, when, as there did not seem to be a subsidence of the symptoms, and as the cornea had become so hazy from punctate deposits on the posterior surface as to dim the sight considerably and to prevent ophthalmoscopic examination of the fundus, it was decided to advise enucleation of the injured eye, which, however, was perfectly quiescent, although entirely devoid of the least vision.

Under this treatment and the careful use of a mydriatic, together with the indicated homœopathic remedies, his cornea gradually cleared, his sight returned, and there were left only pigment deposits in dots on the anterior surface of the lens capsule from the detachment of the previously adherent iris. The stump of the injured eye appeared normal. He was discharged from the hospital and admitted as an out-patient, where his vision was found to be $^{20}/_{80}$ with + 2.50 spherical combined with + 1.0 cyl. ax. 180° under atropin. This was February 24, and he called occasionally for re-examination until it was decided about the middle of March to attempt the wearing of an artificial shell, everything having so satisfactorily subsided in the sympathizing eye meanwhile. A small eye was inserted, and was worn with comfort until the first of April when this was changed to a larger and supposedly better fitting one.

He reappeared ten days later with a recurrence of the active symptoms of the old iridocyclitis, punctate opacities and all, together with great decrease in vision. The artificial shell was immediately removed and the stump found apparently healthy and free from hyperemia or hypertrophy. The pupil was dilated and found sluggishly responsive but clear from posterior attachments, with exception of one above and well back, and gelsemium was given. The artificial eye was not replaced. He had been wearing his old glasses, viz., + 1.0 combined with + 1.0 cyl. ax. 180°, as having afforded the most comfort and the maximum of vision. At the time of present writing, April 27, he has now $^{20}/_{60}$ vision with + 2.50 combined with + 1.0 cyl. ax. 180° under atropin, a clear cornea, no circumcorneal injection, no oversensitiveness to light, but still the pigment deposits on the anterior

lens capsule and a slight turbidity of the vitreous interfering with satisfactory illumination by the ophthalmoscope. Tension, a low minus. The stump of the exciting eye remains perfectly normal in appearance.

This seemed a typical case of recurrent iridocyclitis of the sympathetic variety, and I have detailed it at length to allow free discussion as to treatment past and present. I will say that we do not dare as yet to reinsert the artificial eye, as the sympathizing eye looks suspicious.

The second case was that of a young man, about twenty-six or twenty-seven years of age, who was injured by the premature explosion of a gunbreech some two weeks before I first saw him, December 31, 1907. He was shooting from his left shoulder, as was his usual custom, on account of the defective sight of his right eye, and the explosion badly injured his left eye.

I found circumcorneal injection of the injured eye, a ragged and badly adherent pupil, a cut across the cornea extending through the ciliary region that had healed externally involving the iris in an anterior synechia, a shallow anterior chamber, lachrymation, and much tenderness on palpation, with tension minus 1. He explained that the iris had prolapsed, and had been cut off by a local oculist in Nova Scotia soon after the accident. His vision was reduced to moving shadows at two feet in a strong light. The uninjured eye was clear externally and apparently unaffected. He had been advised to have an enucleation but had declined, so he had made the call upon me hoping for advice more in keeping with his desires. I referred him to an X-ray specialist for examination, and a report came that no foreign body could be found. The eyeball remaining irritable I advised enucleation as a safer procedure, but it was refused at that time, the patient preferring to take his chances; so, figuratively speaking, I was obliged to take off my coat and roll up my sleeves and sail into the case, though I had misgivings. A test of his right vision revealed only $^{20}/_{140}$ under a strong plus lens, and an ophthalmoscopic examination of the fundus yielded a slight turbidity of the vitreous obscuring somewhat an apparent chorioretinitis. He explained that as far as he was able to judge the right vision was the same as usual and had not decreased. He thought that his local oculist was of the opinion that the imperfect right vision was due to an "exanopsia," and certainly

skiascopy did demonstrate a high degree of hyperopia. I wrote to his oculist in Nova Scotia to ask for particulars, but did not receive a reply until long after. I inquired into his habits and found that he was rather a hard drinker, and a confirmed cigarette smoker. He kept a produce shop, and was in the habit of lifting heavy loads. He denied syphilis or any previous accident or inflammation. Had passed through a serious operation for kidney trouble some two to three years previously (my notes are not thoroughly clear on this point), and had had, I should judge from his statements, an operation for floating kidney. Had not been strong and well since.

There being no pain, but only objective symptoms of injured eye, I prescribed a local application of boric ac. (sat. sol.), adrenalin $^{1}/_{1000}$, and dionin 10 %, $^{1}/_{3}$ part of each, two drops three times a day. This was ordered January 1 and continued until January 14, with gradually diminished redness, and absolute disappearance of the sensitiveness, and a much improved general appearance.

On January 14 he developed a bad head cold with sneezing and watery nasal discharge, cough, and roughness of throat. Both eyes injected. The right upper sclera (the uninjured eye) very sensitive in one spot near corneal edge. I prescribed atropin s. viij grains to the ounce three times a day, which uncovered an old posterior iritic attachment, and gave arsenicum. The three following days his vision rapidly diminished, and his vitreous became hazy, but the conjunctival injection and head cold had much improved. I again suggested enucleation of injured eye, and so at this point some members of his family suggested a consultation which I was very glad to accede to and, they having expressed preference for an old school oculist, he was called in. His examination revealed hazy vitreous, clear anterior chamber, no marked circumcorneal injection, the sensitive spot I have above referred to, and an indefinite vision of $^{20}/_{200}$. Our consultation resulted in a positive recommendation of immediate enucleation of the injured, exciting, eye, which was performed by me within three hours. This was January 18.

The eyeball was then hardened in formalin, and later cut open and examined and mounted. It revealed no foreign body, and no microscopical changes except a cicatrix across the ciliary region where injured.

Following this rhus tox. and hot compresses o. d. were prescribed

and the patient kept in bed. His right vision cleared and blurred alternately, the injection entirely disappeared, there was no sensitive spot or photophobia, the cornea remained clear, and he was discharged from the hospital in four days. I still advised rest, so he remained in bed. The spells of blurring continuing, a consultation with the same oculist was called and he suggested sodium salicylate in five grain doses up to fifty grains a day. This afforded no relief, and the case dragged along with its ups and downs under various remedies until February 15, when he decided to go into the Eye and Ear Infirmary, his vision having become suddenly much worse, and there having developed a low plus tension. I thus lost sight of him, but have since learned that there had appeared an intraocular hemorrhage, which gradually cleared up to about $^{2}/_{10}$ vision, and that he was discharged from the infirmary, and had gone home, but that the attending surgeon had since heard that the hemorrhage had recurred and that the sight had again diminished.

I found that contrary to orders, and during the first stages of his treatment under me he had continued to drink and smoke up to the time of enucleation, and one member of his family has since told me that she ascribed the sympathetic involvement of his uninjured eye in a great measure to this. However that may be, or whether or no there was awakened a slumbering subacute morbid condition that was a relic of an oldtime inflammation demonstrated by the iritic attachment, and that would have sooner or later become active, or whether it was a case of straight sympathy, is problematic.

As to etiology, from the mass of conflicting opinions of various investigators and theorizers there seems to have been sifted thus far two theories, one of reflex action through the ciliary nerve disturbing nutrition and circulation of the sympathizing eye, and that is therefore essentially a neurosis, and another, which is by far the most widely adopted, the Roemer theory of metastasis, the infection proceeding by way of the blood stream, or by the lymph and diffusion streams, in the form of a micro-organism not yet determined or isolated.

An analysis of these two cases reveals, as you observe, dissimilar symptoms. In the first case there appears a typical iridocyclitis without pain (this painlessnes being a noticeable characteristic of both cases), an exudation and, as it proves now, a possible involvement of the choroid. Its recurrence on irritation of the stump of the exciting

eye by an artificial shell, and its subsidence after removal of that, suggests a sympathetic nerve influence. The literature of sympathetic excitation indicates many such experiences, especially after a Mules operation. Indeed, I cannot find encouragement in the published experience of others to adopt any of the substitutes for enucleation after the uninjured eye has begun to show irritation. Radical treatment by complete extirpation of the eyeball seems to be the logical conclusion, if surgical interference in any form is to be employed. As to how many such cases of sympathy would occur in a perfectly healthy eye is an interesting and important question. In both of the above cited cases there was a history of abnormal refraction and a probable hyperemia of the deeper tissues long before the opportunity arose for activity. It is the opinion of the recent attending surgeon of the last described case that a large measure of the manifest disturbance was due to a lighting up of a dormant condition of long standing, which theory seems highly probable as we review the symptoms.

The vital question then is, how are we to advise our patients as to treatment, and especially as to the surgical interference by enucleation or one of its substitutes? Is enucleation or one of its substitutes, even in the very first stages of an injury that might reasonably be supposed to threaten sympathetic participation of the other eye, the very best advice, or should we counsel delay for future development? Here again we are brought up against the classification of "irritation" and "inflammation," the former being held by some oculists as a functional condition simply that never degenerates into an inflammatory form. Assuming this to be so, which is still open to doubt, why the risk, and why leave an irritating member that must ever incapacitate its fellow from practical use during its existence?

As far as I am able to form a definite opinion from my limited experience I am at the present writing inclined to advise an early enucleation of the injured eye if the wound involves the uveal tract, and if there is complete loss of vision, or possibly if the sight is very badly impaired by evident intraocular hemorrhages, and with a minus tension, especially if the operation can be done before the other eye shows irritation.

Opposed to this I will call attention to a fairly large class of present day ocular surgeons who doubt the advisability of so radical a

measure, and who point to the fact that the injured eye not seldom remains in a quiescent state after the first subsidence of the shock and even while the fellow eye is beginning a sympathetic participation that occasionally proves destructive, and which is rarely controlled by enucleation; these take the ground that this being so the exciting eye offers a better chance for partial restoration of vision to itself if let alone.

My attitude rests upon the fact of our inability to determine just when the sympathetic influence has begun, and whether it will result in a simple irritation or will develop into a definite ophthalmitis. De Schweinitz tells us that the period of incubation varies from three weeks to sixty years, as in the exceptional case of Alt. One thing seems certain, namely, that if the irritation has well started in its destructive form the chances for control are very small indeed.

Pierce Building, Copley Square.

DISCUSSION.

J. H. BALL (Bay City, Mich.): It is true that many beautiful theories have been put forth as to the channel of communication between the exciting and sympathizing eye, but unfortunately the clinical, bacteriological and pathological confirmation of these theories has always been lacking.

Motias suggested the route of the ophthalmic veins, which receive the blood from the orbit and eye, terminating anteriorly in the angular veins and posteriorly in the cavernous sinus. The angular veins communicate by the nasal arcade and the cavernous sinuses communicate by the coronary and transverse occipital sinuses, establishing a complete venous circuit between the orbits and ocular globes. This theory bids fair to stand the test. But in autopsies of three cases of sympathetic ophthalmia by Deutschman, Gruener and Pagenstecher, examination of the blood vessels gave a negative result.

In an article by Fuchs on "Sympathetic Inflammation, Also Some Observations Upon Serous Traumatic Iritis" he estimated that 14 % of severe traumatic inflammations were followed by sympathetic inflammation. In this article he shows some very interesting pathological differences between what he terms exciting inflammation and endophthalmitis; he speaks of the characteristics of exciting inflammation as consisting in the cellular elements and the distribution of the infiltration in the several tissues of the eye. Sympathetic irritation he considers an independent affection, for the exciting eye shows no characteristic changes. The method of migration to the other eye he compares to that which takes place in tumor metastasis. This, if true,

would indicate that opticociliary neurotomy could afford no protection. Evisceration will not be safe because of the possibility of eventual penetration of the sclera; and enucleation will not give absolute protection because of the possibility of the presence of extrascleral growths of the process.

The same author in another article describes a proliferative uveitis which he found always present in eyes which caused sympathetic inflammations in the other eye. This he describes as an infiltration within the uvea of lymphocytes, giant cells, and epithelial cells. Clinical histories being confirmed by microscopical examination in 24 cases.

Brown, of Chicago, has confirmed these findings and says that "Proliferative uveitis is the essential anatomic condition present in the eye which causes sympathetic inflammation in its fellow." He speaks of the relation shown between the severity of the inflammation in the sympathizing eye and the intensity of the proliferative uveitis.

In the matter of preventive treatment, Lawson, of London, in an article published in 1906, summarized it very well in five questions, which are as follows:

1. Can it be definitely stated of any wound of the globe that it will inevitably produce sympathetic ophthalmia in the other eye? This is answered in the negative. One sees so many shrivelled stumps which are the result of terrible lacerations in bygone years, and which have not in the past and do not in the present cause any inconvenience, that one is inevitably led to the conclusion that sympathetic ophthalmia is an accident to be dreaded and not a certainty to be foretold.

2. If not, what are the lines upon which a surgeon should decide upon immediate removal of the globe? Complete destruction of the globe would be an answer in some instances; secondly, the presence of suppuration in or about the globe; thirdly, the presence of a foreign body which can not be removed and about the asepticity of which grave doubts exist; fourthly, extensive and lacerated wounds of the ciliary body, accompanied by prolapse and leakage of the vitreous, especially if not seen within 24 hours of the injury, and especially also in cases where the other eye is healthy and visually good.

3. What are the considerations which may decide him to attempt to save the eye? In the last three examples given, if some sight be still retained and the other eye is unsound or visually defective it may be advisable to attempt to save the injured eye; provided (a) that the wound be seen immediately or shortly after the injury; (b) that it shows reasonable probability of being amenable to aseptic surgical measures and that it can be satisfactorily closed without entanglement of the ciliary body or vitreous; (c) that when it is impossible to extract a foreign body the latter is known to be aseptic.

4. In the later history of a case, short of definite history of commencing sympathetic ophthalmia, what symptoms if any should decide the surgeon in advising enucleation? First—when an injured eye

will not quiet down after prolonged treatment or available surgical methods, and is the subject of continued iridocyclitis with or without the addition of glaucomatous tension, the danger of supervention of sympathetic ophthalmia becomes steadily an increasing one. Second—the injured eye may become more or less quiescent but the other eye continues to exhibit the signs of sympathetic iritation; this will justify enucleation. Third—in hospital practice, and more rarely in private practice, the question of time that convalescence must occupy becomes one of great importance to the patient.

5. Are there any premonitory symptoms which may accurately be described as heralding the approach of sympathetic ophthalmia, and upon the advent of which a surgeon by immediate enucleation may prevent the onset of the disease? Unfortunately there are no symptoms that can be thus accurately described; the advent of any of the usual clinical signs is a sure evidence that the disease is already present; the very insidious character of its onset may cause the earliest signs to pass unnoticed.

While my personal experience has not been as great as that of many, still I am led to believe that sympathetic ophthalmitis is a condition to be apprehensive of, and the patient with a penetrating wound involving the visual tract should always be warned of the possible dangers of sympathetic involvement.

My experience has been that a very small per cent. of the penetrating wounds of the eyeball, if seen within a reasonably short time after the injury, are infected, and the per cent. of sympathetic involvement in connection with such wounds I have found to be far less than that estimated by Fuchs.

Noninfected wounds involving the uveal tract to any material extent, I always regard with more or less apprehension even though they heal promptly. They should be kept under observation for several weeks, for the contraction of the cicatrix will often cause disturbance of the ciliary nerves and give rise to sympathetic irritation. I have never known a typical case of sympathetic inflammation that arose from this cause, still I am able to entirely eliminate from my mind the possibility of sympathetic irritation developing into sympathetic inflammation.

I believe that every penetrating wound of the eye should be treated with a view to the possibility of saving the eyeball if not the vision. The question of time spoken of by Lawson I have encountered very seldom, but on the other hand there exists among laborers, who are most frequently the subjects of injuries to the eyes, an almost universal desire to save the eyeball even though the sight be lost and the eye badly scarred. In my efforts to save the globe for such patients I have often been very agreeably surprised to find that I have also been able to save a little vision.

When the vision of the injured eye is lost beyond a reasonable pos-

sibility of recovery I believe that enucleation is indicated at the first signs of irritation, such as slight photophobia, blurring of vision and slight conjunctival congestion in the sympathizing eye. In such cases I feel that the various substitutes for enucleation are contraindicated.

H. I. JESSUP (Philadelphia): I feel that Dr. Payne is decidedly in favor of removal of all foreign bodies which have penetrated the eye when such removal is possible. This view I can most heartily endorse, and must say that in case of failing to remove a foreign body from the eye, I should most strongly urge immediate enucleation irrespective of the amount of sight, as the question of a foreign body becoming encysted is so entirely uncertain.

When we stop to consider that sympathetic inflammation can start without any of those prodromal symptoms which we call sympathetic irritation making their appearance to warn us of the immediate danger, it appeals to me more and more that we *dare* not temporize, but must not only advise early enucleation, but *insist* upon it.

In case a patient positively refuses enucleation, let us then follow the advice of Dr. A. Darrier, of Paris, whose method though heroic appeals to me in the strongest possible manner. His advice is to thoroughly cauterize the wound with the galvanocautery, even carrying the incandescent wire into the interior of the eye (lens, iris, vitreous even) thus destroying by heat all of the germs we possibly can. In addition to this he makes use of subconjunctival and even retrobulbar injections of cyanide or bichloride of mercury in solutions ranging from $^1/_{500}$ to $^1/_{1000}$, into the injured eye. Darrier claims that in this way he feels satisfied that he has prevented sympathetic inflammation from occurring and that in those cases in which this form of inflammation was already in existence the injection in the exciting eye cut short the inflammation in the sympathizing eye in a most wonderful manner. He also states that in those cases in which there is a recurrence of sympathetic inflammation after enucleation of the exciting eye, the injection of the cyanide of mercury into the stump of the enucleated eye and the tissues at the apex of the orbit has resulted in most brilliant cures of the inflammation in the sympathizing eye.

That there is much good to be derived from these subconjunctival and retrobulbar injections is quite beyond doubt, and they are now used not only in Paris, but also quite extensively in Vienna. Let us adopt them, but with caution, lest in trying to avoid Scylla we be wrecked on Charybdis.

CATARACT; POSSIBLE PREVENTION, PROBABLE OPERATION, WHICH?

LEIGH Y. BAKER, M. D.,

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IT is a true saying that "an ounce of prevention is worth a pound of cure." I have no doubt as to the answer which you would give to this question and, were equal results promised, you would choose prevention of cataract rather than operation in every case. Unfortunately the choice does not lie wholly in our own hands, as the majority of cases do not come into our care until the lenticular opacity is too far progressed for relief save by operation.

For ten years or more I have advised all cases of incipient cataract to undergo treatment for the purpose of preventing, if possible, the advance of the disease; with this advice I argue as follows: "If the cataract progresses in the classic manner you will gradually lose your vision, and if the opacities progress equally in the two eyes there will be a period during which you will be practically blind. An operation can then be done which will restore your vision, altho to what extent cannot be foretold except in a general way; that is, you may have excellent vision or you may have much less than you now have. There is a possibility, however, that by treatment the progress of the disease may be checked and your present vision retained indefinitely. Then, too, a few cases become stationary without any apparent cause, but these cases are not predeterminable, as it is impossible to say in which class your case may be."

This argument I believe to be frank and honest and I firmly believe it will hold good in every case of incipient or beginning cataract, unquestionably so in patients of advanced age where the best of vision is not demanded and only relatively good sight is actually needed, or where for other reasons an operation is not advisable. Also where vision is good in one eye, altho the cataract may be advanced to the intermediate stage in the other, or where the local or general condition would mitigate against a successful operation.

I remember one case, a man of sixty, who came to me with a mature cataract of the left eye, but showing only a slight haziness of the right.

He had a chronic catarrhal conjunctivitis of both eyes, worse in the left. He wanted me to operate, but I pointed out to him his good right vision and suggested we try to retain the vision of the right eye rather than risk an operation on such a field as we had in the left, for even with the most successful result we could hardly hope to improve his sight. He assented to my views and for a year was under treatment, during which time I combatted both the superficial and deep conditions. His vision then was better than when the treatment was begun, but at that time he left the city on account of the health of his wife, and I lost sight of him for three years. The opacity of the right lens had increased to some extent, but he could still see to get about and was able to read large print. He had been persuaded to have the left eye operated and had lost the eyeball thru catarrhal affection. He absolutely refused to consider an operation to the right eye, saying that if he could preserve the vision he then had he would be satisfied; this during the two past years we have been able to do.

Naturally the most favorable results are to be obtained in the very early stages, and, unfortunately, the majority of cataracts come to us when beyond that period, but it seems to me this state of affairs could be relieved by properly concerted measures.

To accomplish this would necessitate much missionary work, but I believe the results would justify the efforts. It should begin with an effort to disabuse the minds of the people as to the absolute inevitableness of cataract. Up to the present time they have been taught that nothing save operation would benefit, and consequently no attempt has been made to stay the progress of the disease.

This statement is true in effect in spite of the fact that in 1889 the subject was brought up by Dr. A. R. Baker, of Cleveland, in a most interesting paper, read before the Ohio State Medical Society (see Transactions, 1889, page 91). In 1890, Dr. Richard Kalish wrote on the same subject in the New York *Medical Record* (Vol. 37, page 341), and Dr. S. D. Risley, of Philadelphia, presented the subject in a paper read before the American Medical Association (see *Journal of the American Medical Association,* 1891, Vol. 17, page 323), and Dr. Jackson, of the same city, before the Medical Society of Pennsylvania (Transactions, Vol. 22, page 186). The efforts exerted thru these papers were unfruitful of result, not so much because the arguments did not ring true as because their foundation was not sufficiently broad thru lack of knowledge.

The observations of the intervening years have opened new lines of thought, have brought new vistas into range of every scientific view, but this opens up a subject upon which I shall touch a little further on.

If the lay mind can be impressed with the idea that cataract may be prevented, if the laity can be informed as to the early symptoms of lenticular change, and if they (the laity) can be made to feel that their permanent vision depends upon the quality present at the beginning of treatment, much can be accomplished.

Again, if the opticians can be persuaded to co-operate more fully with the oculists in this matter a three-fold benefit would be derived.

It does little good for us to tell one another concerning these things, for compared with the field of the oculist that ground outside is enormous and can only be reached by direct measures.

One great obstacle in the way of treatment lies in the patient himself, who is often unwilling to continue under a treatment which is necessarily long and tedious, but this fact does not in any way destroy the force of the argument that it is better in these incipient cases to try to preserve the vision rather than to restore it by operation at some later period when vision has been lost.

The first effect of treatment is to partially clear the haziness which has last appeared and thereby to a slight extent improve the vision; later the vision will fluctuate somewhat, but in effect should remain about the same as when treatment began.

In beginning treatment correct any refractive or muscular errors.

Avoid extremes of light and temperature.

Correct general nutrition.

My practice has been in every case to use some local application, and that which I have used to the greatest extent has been succus cineraria maritima.

This drug never has, never will, clear a cataractous lens, but it has alone, unaided by other means, either local or general, prevented the extension thereof and limited the disabilities therefrom in more than one case and therfore is worthy of use.

I have recently given much thought to the analogy between cataract and arteriosclerosis, but my observations have not been sufficient to enable me to draw any conclusions; I believe, however, that many interesting facts may be devloped if we will carefully determine the blood pressure and condition of the arteries in each case of cataract.

Cases of cataract have been held in statu quo for at least seven years;

more than half of the cases which have remained under my observation for at least five years have shown no increase in density. Some of the cases have shown an improvement of vision. No time is lost in any case nor does the treatment, even tho unavailing, reduce the chances for operative success; on the contrary, it increases the chances by improving the general health.

One or two cases may illustrate and accent the points I wish to make.

June 14, 1897, Mrs. S., aged 62, had cataract diagnosed by two oculists, both of whom advised doing nothing until the eyes were ready for operation. I confirmed the diagnosis. She asked if nothing could be done other than operation. I outlined my views on the subject and she expressed her willingness to accept her present vision rather than face an operation. Her vision was then sufficient to slowly read ordinary newspaper type, if clearly printed. Examination disclosed a chronic interstitial nephritis, for which I advised proper treatment which was carried out by her family physician. Locally she used cinerara, and vision improved rapidly, so that in three months she could read with perfect ease. This vision she retained until the winter of 1904, when her kidney trouble became acute and her vision was reduced to ability to read coarse print. She died June 4, 1905, but during seven and a half of the eight years her vision was sufficient for all purposes.

A patient who had been under my care in 1894 for rheumatic iritis and whom I had seen professionally, more or less frequently, until 1899, when she moved to the west, came to me in 1892 with a slight haziness of both lenses. I diagnosed cataract, which was confirmed by another oculist whom she consulted without my knowledge. She began treatment for the purpose of preventing an advance of the disease, and her vision is now practically what it was in 1902.

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DISCUSSION.

ELLA G. HUNT (Cincinnati, O.: This subject of the possible prevention of the maturing of cataract or its retardation as long as possible, with useful vision, has been with me a very interesting study for several years, but as yet it is a study. The results of my opinions are not definite enough to satisfy me.

We all should like to see the day when we can be sure that we can "cure" cataract without the knife. Of course I have treated immature

cataracts and seemingly have retarded their growth, or they have not grown while under my care. Two cases especially—one of ten years' the other of eight years' standing—would be more brilliant as reports if I could omit the last six months. During this time there has seemed to be a decided retrograde movement, and one especially looks as if it would be ready for operation by fall.

I have to report only one case of absolute disappearance of well marked opacity of lens. In this case—probably diabetic in origin, as urinalysis showed sugar—I was able to order an entire change of life, occupation, diet. As general condition improved I lost sight of her for three years, when she returned for a change of reading lenses. Upon examination the cataract had disappeared. The patient was greatly improved in general nutrition.

The treatment as outlined by Dr. Baker is excellent—except that personally I have not been rewarded with such marked success under the use of succus cineraria maritima. I wonder what proportion of his success depends upon his other treatment as "(1) Correct refractive or muscular error. (2) Correct general nutrition."

His results are certainly good:— "More than half of the cases which have remained under observation for at least five years have shown *no increase* in density.

"First effect of treatment is to partially clear the haziness which has last appeared and thereby to a slight extent improve the vision, later the vision will fluctuate somewhat but in effect should *remain* as when treatment began."

Succus cineraria maritima was rather elaborately discussed several years ago by this Society when Dr. Bushrod W. James gave us a paper on the drug. The concensus of opinion at that time seemed to be rather against its use—many reporting negative results and a few were of the opinion that it was harmful. I was surprised in looking up that paper to note that Dr. Baker opened the discussion. Evidently he has been using it more since that date and brings us later reports.

My own trials with it were negative as to improvement, and that it often caused quite a little irritation. Some may think this irritation rather beneficial, at least causing a change in circulation. I rather am inclined to try to put these eyes in a state of least irritation or strain possible and to look to general nutrition for betterment of lenticular conditions—hence do not now use local massage, steaming, etc.

Cataract being a local disease due in great measure to general conditions, immature cataract seems to be best treated along these lines: Correction of any refractive muscular error—that is, put the eye in most comfortable condition for use. Let them use their eyes, if use is not painful, for near work, telling them to be sure to look up at frequent intervals and to glance at something at a distance. When the eyes become weary stop using them.

Attend to general health, maintaining the best state of nutrition.

Combat pain or any discomfort in any part of the body as tending to lower vitality.

Mental gymnastics. Impress on patients the importance of a cheerful mind, its effect on health, and that change of thought is under control of the will. Find, if possible, some pleasant occupation.

If possible keep from them the possible future condition of the eyes. I tell the friends of the true state of the eyes and the probable or possible future, but have found it much better not to let the patient know of his or her possible future. 1st. Because we are very uncertain as to rate of progress of any cataract. 2d. Worry or grief has often seriously undermined health—continued worry makes matters worse —which will be the case if the patient *fears* he may become blind, while he *hopes* we may "cure" him or at least keep his vision.

I do find that some local applications—as calendula and boric acid or hamamelis if the veins in the eye or elsewhere are much engorged —often relieve the uneasy feeling about the eye, but I was to discuss a paper not write an essay on cataract.

I am glad more of the opticians are becoming well used to the use of the ophthalmoscope, as then more of the cases of incipient cataract will be detected. Many old people have more or less opacity of a lens, seemingly with normal vision. As many people are fitted with glasses by opticians probably the percentage is greater than we think. Schoen, 1893, out of 6689 eyes of all ages examined for lenticular opacity, gives 18¾ per cent. as having more or less cataract. Again, out of 4483 cases under 40 years, taken as they came to the Leipsic clinic, he found 11 per cent. with trace of cataract, yet the ratio of mature cataract to eye cases in several hospitals was only about one per cent.

Thus, we see, that many "cataracts" never mature. As to general prognosis. Wm. F. Norris says as to rate of formation of cataract:

"In simple senile cataract the rate of progression is very slow, and months and often years elapse between the period of commencement and that of maturity. This is not only true of the form which begins in the peripheral cortical layers but also of that which commences with perinuclear opacity; indeed this latter form, which often occurs in myopic eyes, is generally held to be unusually long in ripening. On the other hand, traumatic and complicated cataracts often form with great rapidity."

In experiments on animals it has been found as to absorption of substances—as salt, potassium iodide, ferrocyanide of potassium, tincture of chloride of iron—that the points of most ready absorption are in the equatorial region of the lens. As most senile cataracts commence in that region we may surely expect results from internal administration of drugs—as well as any local application.

Now is there no use in our treating patients with immature cataracts? Certainly our homœopathic remedies are the best agents known to disease of eyes or elsewhere to correct and improve the general con-

dition. With a knowledge of these plus general knowledge of physiology and hygiene, we, of all physicians, ought to be able to put nature on the right track, and stay, at least for a time, the onward growth of this form of disease.

E. HUMPHREYS (Philadelphia): In discussing Dr. Baker's paper I would say an ounce of prevention *is* worth a pound of cure.

In dispensary practice, we do get the early stages of cataract; often long before the patient realizes what is the trouble—they complain of slight dimness of vision, and consult us as regards glasses. When the ophthalmoscope is used we find spicules in the lens, sometimes very few. I certainly agree with the doctor in these cases: Carefully refract, take off all the eye strain and muscle strain and give a simple collyrium—boric acid solution or any simple eye wash—to keep the eyes in good condition. If the patient does find out the trouble it does relieve the nervous strain. I often use sulphur 200; in my experience it has given my patients great comfort.

As the doctor has said, we have many cases that seem to remain stationary for years, with little change, but if we have decided spicules in the lens, as shown by the ophthalmoscope, I do not believe any treatment of much avail, more than to quiet the patient's fears and nervous symptoms.

As regards the use of succus cineraria maritima, I have tried it faithfully, and seen it tried, without the slightest advantage in prolonging or preventing cataract.

HIGH FREQUENCY, HIGH POTENTIAL, ELECTRICAL CURRENTS IN DISEASED CONDITIONS OF THE EYE AND EAR.

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THE first essential in the study of a surgical operation is a thorough understanding of the parts involved.

No surgeon would for a moment think of undertaking an operation without any knowledge of the use of the instruments necessary for its successful performance, nor would he start to do the operation without first carefully examining and testing his old and often tried tools.

Yet these same men, many of them, will start the application of an electrical current, a much more potent agent many times than their knife for good or evil to the patient's welfare, without either an adequate knowledge of the instruments to be used, or even a superficial examination of the condition of the electrical apparatus.

Should a failure, complete or partial, be the result, they never think of blaming themselves, but place all the blame on the apparatus or the author they are trying to copy, many times running into print and condemning him in no mistakable terms for having misrepresented his results, when in reality, the fault lies with their own inadequate equipment or faulty technique.

It is because of these persons, principally, that I have hesitated for the past four years in presenting to this, or any other, society the results of my original work, covering something like seven years' time and nearly a thousand cases.

The first essential is a thoroughly good equipment, the next, an equally thorough knowledge of what is required to be accomplished, and how that desired end is to be attained.

In satisfying that first requirement, it is better to take the advice of some well known and reliable electrical man, than to rely upon the oft-times misleading and frequently deceptive statements of the manufacturers.

As an example of the latter, a certain well known western maker is extensively advertising an incandescent lamp as producing "Ultra Violet Rays," when it is a well known fact that these rays will not penetrate glass.

Again this same maker's agents represent that they can show you the rays, when the facts are that they are invisible to the human eye, unaided.

My own equipment has been made especially for me, and is much more elaborate than is requisite for this work alone. After a careful investigation of all the makes of coils, and I am satisfied that the coil is the best source of electrical energy, I am recommending those made by the Wappler Controller Co. as the best and least liable to get out of order.

In considering the second essential, we will take the liberty of reversing its component parts and considering the means of attaining our desired therapeutic success first.

So much confusion prevails, and so many misstatements of facts and statements without any foundation of facts, have been made that it seems best to first clear the atmosphere of a little of this mud.

The first clinical use made of the high frequency, high potential current, was by Prof. A. d'Arsonval, of Paris. Although he was not the discoverer of these currents, he did however discover and devise the means for their medicinal application.

There is seemingly much confusion as to what constitutes a H. F. current. Many men believing the term has reference to the number of interruptions, purely, hence the false conception that a static machine, unaided by other device, is capable of producing this modality.

It would be much more correct to speak of this particular modality of current as the d'Arsonval and drop the misnomer of H. F., for it is not only a current of very great rapidity of interruption, but also of an oscillatory motion.

While it is true that the static machine is capable of producing interruptions in a far greater number than any purely mechanical device can, the current so interrupted is distinctly a one directional current, having none of the other essential characteristics of the bidirectional, oscillating, d'Arsonval, where competent scientists declare the oscillations reach the almost inconceivable rapidity, of more than fifty millions per second.

One of the most simple and at the same time effective ways of demonstrating the difference in the two currents is by means of their action on the human body. The connection having been made with the terminals of a static machine, when the spark gap has reached the distance of one-eighth inch, the current has become painful, and a much greater distance is unbearable; while with the d'Arsonval currents it is possible to frequently attain a spark gap of three or more inches.

There are many devices for producing the H. F. H. P. current, and because of the slight variation in the modality produced by the different apparatus, it has become advantageous to designate each current by the name of the inventor of the apparatus. Thus we have the d'Arsonval, Oudin, Piffard, and Tesla. There are several other devices, but these are the principal ones, and the only ones, that have been used very extensively clinically.

Three things are essential for the production of an undulating current *a source of energy, a condenser* and a *solenoid* or spiral. The source of energy may be either the static machine or the commercial current. When the latter is used it is necessary also to use some kind of a coil, in order to step up the voltage of the commercial current. The condenser may be either large Leyden jars, or a flat pile condenser. The solenoid is simply a wooden cylinder with several turns of coarse copper wire wound about it, proper terminals being provided for connection with the source of energy.

The current derived from the static and the coil differ but slightly, if at all, save in the potential and amperage.

Those obtained from the static being of a much higher potential, while where the coil is the source of energy the amperage is very much greater. I have reference here to the ordinary coil connection. There are H. F. apparatus made where the potential is as great or exceeds that of the static.

The connection just described would deliver the d'Arsonval currents, of which there are three: (1) the shunt, (2) the autocondensation and (3) the autoconductive current. This same classification will apply equally well to the Piffard and Tesla currents, as there is no difference, practically, between these three currents, clinically. They comprise the currents having the penetrating power, and are the ones most frequently used.

The shunt current is obtained by connecting the cords to the ter-

minals of the solenoid, first having made the proper connections to the source of energy, and having the patient hold the electrodes. Just here I wish to digress long enough to call to your attention a warning, given some years ago ('06) by Dr. Piffard, of New York, and which I think will bear repeating, as I have several times seen it disregarded by both operators and makers. It is this: Always connect your patient to the solenoid direct, never make the connection from the condenser to the patient. To illustrate, when using the static as the source of energy connection is made with solenoid from the outer armatures of the Leyden jars to the ends of the solenoid, then the patient is frequently placed in shunt by also connecting the electrode cords directly with the Leyden jars at the same point as the solenoid connection was made. Should these connections to the solenoid become disturbed in some way, you would have a Morton wave current with a spark gap of from three to four inches, and the resulting tetanizing effect might easily prove fatal. I have seen this connection made in some of the coils on the market, as well.

The other two currents are easily understood from their names; in (2) the autocondensation current, the patient being so connected, on an insulated platform, that he acts as one side of a capacity, while in the third, which is little used in this country, he is placed in a large cage or solenoid.

The Oudin current, corresponds more to the static breeze, both in its physical and therapeutic effects. They are not identical but *resemble* each other. It is obtained by connecting one end of a fine wire spiral or cylinder to the upper terminal of the solenoid. From the free end of the fine wire coil is given off a most beautiful fine electrical discharge, "effluve."

These currents may be used for therapeutic purposes by utilizing either a glass or a metal electrode, according to the effect that you are desirous of obtaining, and that effect may still be further varied by the degree of vacuum that you have in the glass electrode you are using.

Several years ago my attention was attracted to the unusual results being obtained in old chronic cases of joint involvements by the eminent German surgeon of Bonn, Dr. Bier.

I determined to attempt the reproduction of the same condition, namely, local, artificial, sustained hyperemia in the eye and ear.

Dr. Bier has demonstrated eight effects of local hyperemia, (1) an

increase of the local supply of coursing blood, (2) lessening of pain, (3) death of all bacterial life, (4) dissolution of the products of inflammation, (5) increase in the mobility of the inflamed joint, (6) localization of the disease, (7) termination of necrosis, and (8) that it has restorative power and does not interfere with nutrition. He says that it is indicated in all acute, subacute, and chronic inflammation, whether specific or not.

It is a well known fact that heat will produce hyperemia, that light is a stimulant, and that certain electrical currents have an effect upon nutrition.

With these two groups of facts in mind, I started the investigation of the d'Arsonval current.

In 1902 Denoyes, of Paris, published his work, I had almost said classical, "Les courants de haute fréquence" in which he presents somewhat freely the results of exhaustive, experimental research as to the action of these currents upon both man and beast.

Briefly they are as follows:

(1) The number and amplitude of the respiratory movements are augmented.

(2) The respiratory combustions (intake of oxygen and outgo of carbonic acid gas) are notably increased, d'Arsonval finding the elimination of carbonic acid in his own case more than doubled.

(3) Two independent workers, Tripet and Guillaume, found an easily demonstrable increase in the rate of reduction of hemoglobin.

(4) d'Arsonval's contention of the increased elimination of carbonic acid gas further confirmed by Bonniat, Bordier, and Lecomte.

(5) Apostoli and Berlioz found, as a result of the analysis of the urine in 761 subjects, an increase in the elimination of solids in 282 or a little over one-third of the total number examined. Denoyes, Martze and Rouviére working together with three healthy men subjects, examining the urine chemically, toxicity tests, and by cryoscopy, found an increase in the volume of urine, urea, uric acid, total nitrogen, phosphates, sulphates, and chlorides eliminated in twenty-four hours.

These facts not only clearly indicate the great physiological action of the d'Arsonval currents, the stimulation of metabolism to a point of hypermetabolism, but also prove the deep penetration of these currents.

The great stimulating electrical currents are the static wave and the d'Arsonval currents.

Dr. Piffard, after years of clinical experimentation, states that he is satisfied that the d'Arsonval currents are many times as effective in this respect, due he thinks to their much greater amperage.

As already stated, the effects of the currents are different when the vacuum of the electrode is varied. The best results will be obtained in all acute cases, and in all skin cases whether acute or chronic where a glass electrode is used, with a low vacuum, as low as possible consistent with good fluorescenee, which should be purplish.

In all cases involving a nerve or nerves, or in old chronic conditions where there are adhesions present to be dissolved, a high vacuum is indicated. Here the vacuum should be so high that the fluorescence has a whitish or greenish color.

In the following clinical report where no mention is made of the current used it is understood that it is the d'Arsonval autocondensation. Where other currents have been employed mention will be made, as will the dosage employed in each case or group of cases.

Skin about the eye, brow, and lids, 30 cases, embracing 4 cases of skin tuberculosis, 1 of the right brow and temple, 1 left brow, 1 of right upper lid, 1 of both lids of left eye.

Treatment, sparks from ⅛ to ¼ inch in length, for three minutes, followed by five minutes with my bipolar electrode in contact.

Two cases of lupus vulgaris, treatment same.

Eczema, 6 cases, sparks, omitted in all but one case.

Angioma, 1 case; treatment, sparks from both glass ball and platinum fused in wire electrodes, the metal doing the most good, followed by five minutes with electrode in contact.

Xanthelasma, 4 cases; treatment, sparks from glass electrode. These cases were only a partial success, but I am certain from later experience that if they had been treated with the metallic spark, from the Oudin current, the results would have been all that could have been desired.

Molluscum, 13 cases; treatment, Oudin current, sparks from platinum fused in wire. Three minutes.

In using the metal sparks with the Oudin current, care must be used to have the electrode close to the skin, $^1/_6$ to $^1/_8$ inch, and to attack only a small area at each sitting; this will avoid scarring.

Blepharitis marginalis, 160 cases; treatment, fine sparks with ball electrode, results good in all.

Hordeolum, 100 cases; treatment, sparks direct to inflamed area.

Chalazion, 26 cases. Here again the results were partially unsatisfactory, but in later cases where direct sparks from platinum electrode were used, the results were all that could be desired.

Diseases of the conjunctiva. Conjunctivitis, acute and chronic, all forms 225 cases; treatment, small ball, or conjunctival electrode in contact, using a rubbing motion, five minutes.

Pterygium, 5 cases; 3 failures, sparks from ball.

Cornea. Keratitis, 10 cases; treatment, corneal electrode direct to cornea, heavy amperage was used, and in some cases very short sparks with great hastening of the process.

Ulcer, 25 cases, including two of abscess; treatment, short fine sparks from glass ball electrode.

Opacities, 10 cases; treatment, short fine sparks direct, and continuous current through the lids.

Retinitis pigmentosa, 2 cases; treatment, low vacuum electrode on lids, time 10 minutes, marked improvement in both cases.

Toxic amblyopia—alcohol, and tobacco, lead; treatment, the usual restrictions were placed on the cases, an effort was made to determine the relative efficacy, by giving the treatment to only one eye at a time, and comparing its progress with the untreated eye; in one case the eyes were treated alternately, that is, one was treated for two weeks, and then the other. In this way it was demonstrated that the current very materially assisted in the rapidity of the recovery.

Amblyopia exanopsia, 16 cases. It would seem from the results that age has something to do, not only with the rapidity of recovery but also with the amount of benefit obtained.

Paralysis and paresis, 20 cases, including paralysis of all of the extrinsic eye muscles, both singly and in groups, and ciliary muscle. Here we use the high vacuum spiral electrode, making application both through the lid, and over the muscle involved, the muscle electrode being in contact with the conjunctiva. Time ten minutes, 5 min. in contact and 5 min. through the lid.

External ear, eczema, 10 cases, including four of the canal; treatment, low vacuum ear electrode in direct contact, time 10 minutes.

Furunculosis, 30 cases; treatment, spark and contact.

Psoriasis, 2 cases; treatment, fine sparks and contact.

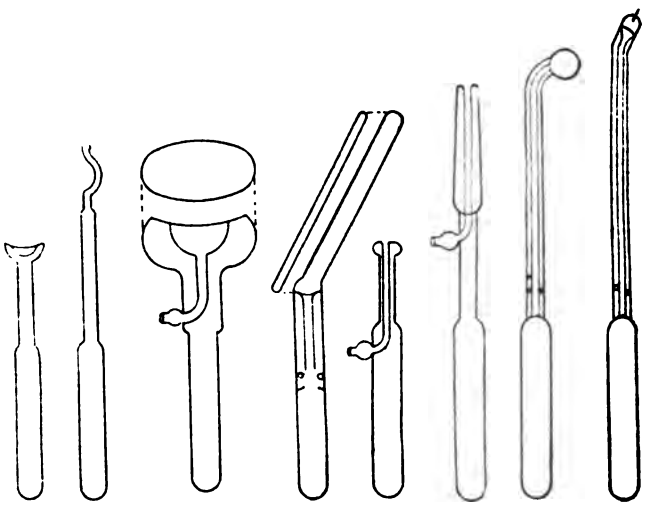
Acute otitis media nonsuppurative, 5 cases, in conjunction with mas-

sage using combination electrode, 100 cases. In this last series, only 9 cases have received more than one treatment; of the 9, 5 had two treatments, 2 had three, and 2 had five. In no case was there a failure or rupture of the drum.

In all the remaining cases which I shall report, massage was used in combination with the electrical current, as I found that it materially aided in the results obtained.

In cases so far reported, that is the eye series, nothing was used but the electrical current.

Hemorrhage, within the middle ear, resulting in complete deafness to all sounds, with all or many of the classical symptoms of Menière's



disease, four cases; treatment, low vacuum combination, 10 minutes, massage alone 10 minutes.

Acute mastoiditis, with all classic symptoms, ten cases; treatment, low vacuum tube over the mastoid, 5 min. within the canal, combined with massage 10 min.

Chronic deafness, from otitis media chronica, without ankylosis of the stapes, 500 cases; treatment, high vacuum tube, combined with massage, time 20 min. to 45 min., over all. Results, satisfactory improvement in each case.

At the outset of my experiments I was confronted with the difficulty of not having proper electrodes. This has been entirely overcome, with time, patience and the effective help and co-operation of

Mr. Farrlay, of the firm of Machlett & Son, of New York who now carry my electrodes in stock.

Much has been accomplished not here reported, as the work is not completed and this paper is already too long.

I shall be glad to have others of this society co-operate with me in this work, and will be glad to give them any aid within my power.

307-8-9 Shukert Bldg.

DISCUSSION.

HERBERT DANA SCHENCK: I regret to have to apologize for not being able to discuss this paper from the point of clinical experience. The writer called my attention to his electrodes when calling upon me one day last April. It seemed to me that this form of treatment might be effective in certain forms of middle ear catarrh with some extension to the internal ear. The electrodes which Dr. Soulé suggests were ordered at once, but the makers put me off from week to week until it was more than a month before I received them, and all except one case had drifted away; hence my clinical experience is very limited, as this single case has only been treated about two weeks.

Much of the fault which the writer of the paper finds as a cause of the failure of others to duplicate the claims of those who have originated a new form of treatment might be avoided if a more detailed description was made of the apparatus used as well as exact details of time, position, etc., for the employment of the current. If in this paper he had described in detail some of the types of cases treated and had gone into the detail of the exact form of electrode used, its position and the amount of current used and from what apparatus it was generated, we would have been in a better position to duplicate his results. As it is, in the treating of his skin conditions he does not mention the size of the vacuum tube employed but simply says the treatment consisted of "sparks from an eighth to a quarter of an inch in length for three minutes followed five minutes with my bipolar electrode in contact." It would seem as tho we should know the kind of electrode and the exact method of application in order to duplicate these results. This holds true in the treatment of angiomas and xanthelasma.

For many years I have made use of pneumomassage in the treatment of catarrhal conditions of the middle ear in such a way as to produce a distinct hyperemia of the middle ear, and it seems to me that my results were enhanced when this hyperemia was carried to a point just short of an aggravation.

The treatment of cases where for any cause little or no hyperemia was produced in the middle ear have been more or less failures. For this reason it seemed to me that the combination in the ear electrodes of massage with the current might be very efficacious, since Bier has explained that the increased blood supply had a tendency to increase

the mobility of inflamed points, to kill bacterial life and, to increase nutrition. In using pneumomassage, however, I found that my best results were obtained when the ear pieces were not held so as to produce a distinct and air tight contact in the canal, but with sufficient contact to produce a distinct vibration in the air tubes and auricles.

In the one case which I have treated there is considerable loss of function without much evidence of change in the middle ear and with Eustachian tubes that were easily opened. Pneumomassage during the past year has increased his hearing from hearing whispered tones at 25 cm. to 100 centimeters in the right ear, and in the left to about 25 cm. There has, however, not been much change in hearing metallic sounds, the acoumeter being heard about the same now as at the first test. The hearing dropped down very materially during the late spring when he was compelled to be out of town and not have treatment. At the time of beginning the electrical treatment his hearing in the right ear for whispered tones was 35 centimeters, and in the left 13. He has been treated for the past two weeks every other day with the suction and release apparatus manufactured by Wappler Controller Company, which, when applied to their pneumatic pump, produces straight suction and release without any pressure. The use of the spark gap from a small 12 inch coil using a high vacuum electrode energized by Oudin resonater. This placed in the canal and held there five minutes with a moderate suction and release produces slight hyperemia, and if the electrode is held snugly in the canal a slight tinnitus. The speed was a moderately high one, much higher than has been my custom to use in the treatment by pneumomassage, but I understood Dr. Soulé to suggest that the speed should be rather rapid.

While Dr. Soulé was visiting me he treated a fellow physician who had a small abscess on his cornea, which had been under treatment for ten days. It was healing nicely but Dr. Soulé said he could hurry matters up, and, as he happened to have an electrode with him, he proceeded to apply the current direct to the eye followed by a very energetic application of the high frequency current to the closed lids. There was a violent reaction in this case, and the conjunctiva was extremely hyperemic with slight chemosis. There was considerable itching and a feeling of discomfort for two or three hours. After that the eye rapidly cleared and the ulcer gave the doctor no further trouble.

C. GURNEE FELLOWS: Dr. Soulé tells us that we should know a good deal more about electricity than we do, and so we should. I agree entirely on that point. I read the doctor's paper a month ago, and was so mystified by his superior knowledge and scientific discussion of the various forms of electricity that I was sure that I was not capable of discussing his paper satisfactorily. This morning I visited him and saw his apparatus and was more mystified than ever. How he knows enough to have the apparatus made is more than I can see. I use electricity almost daily in my practice, and I am experimenting with the high frequency current, but I have not got to a point where I can

express myself as to its scientific value because I use other methods of treatment at the same time and cannot separate the results. Dr. Soulé's method of treating one eye with electricity and nothing else will give practical knowledge of the value of the different forms of the current if followed up.

My testimony as to the clinical value of the high frequency current would be negative, as I said, on account of my not being able to say what the current alone would do. If Dr. Soulé's report of one hundred cases is substantiated in detail, it would be a splendid basis for our future work. He has exhibited here a great number of ingenious electrodes which I am glad to see, altho I suspect that most of us could get along without so many refinements by using one for a number of purposes. He has electrodes adapted to every possible part, and no doubt they are very efficacious, and possibly their use is the reason that he gets such good results.

I should like very much to have some of his cases reported at greater length. I should be especially glad, and I think that others would be equally glad, if he could give us some results in tinnitus. I am not skeptical, only I cannot produce any positive testimony from my own results in favor of the high frequency current.

G. S. PECK (Denver): Nothing that I can say will have much value upon this very technical subject. Dr. Fellows hits the nail on the head when he says that the various kinds of electrical currents and their therapeutical value is a specialty in itself. Dr. Soulé's success is no doubt due to the special attention and study that he has devoted to the subject. It is an immense subject; I have one apparatus that gives fourteen modifications of the faradic current alone. If you go deeper into it and take up the static and the high frequency currents you will find that it is a subject that takes up about all of your time. It is really in an undeveloped subject, and the great difficulty is to get information as to the value in therapeutics of the different currents. It is almost like the adaptation of the homœopathic remedy to the diseased state of the patient. I believe that it is lack of precise knowledge that so many times gives us our failures. As for myself I have abandoned the use of electricity except in the plain galvanic and faradic forms, simply because the study and use of the various forms of electricity takes too much time; it is a specialty in itself. I believe that they will prove more and more useful as we learn more about them.

PRESIDENT: If there is no further discussion I will call upon Dr. Soulé to close.

I. C. SOULE: I appreciate Dr. Schenck's criticism about detail and wish that I could give it, but as I was writing a paper and not a book, it was impossible to give fuller details. The president would have called me down before I got thru the preamble if I had attempted to make my paper any longer. So far as possible I give the different treatments, and I state in the paper that unless otherwise mentioned the d'Arsonval autocondensation current is the one used. I did not think that it was

necessary to mention that fact every time. I could give only a condensed statement because to give all the details of a single case would have taken up an hour's time.

Dr. Fellows speaks of using this method in conjunction with other means, and spoke of inflation. I simply want to state that I have one catheter left and Dr. Fellows can have that. I have not used inflation in middle ear troubles in five years. The sign of effect of the current is the hyperemia produced, and it should be carried just short of the danger point. Dr. Schenck spoke of getting better results when his ear piece was not closed tight; the reason of that was because he was using a to and fro motion. This massage must touch and break. I call the doctor's attention to that, and he might modify his machine in accordance with it. The difficulties of tinnitus was what started me on this work, and with this technique you can control tinnitus much more successfully than with any other treatment. If you combine it with massage you will get much better results; still Dr. Schenck got a wrong idea about what I stated about massage of the ear; there it should not exceed one hundred and eighty strokes to the minute. In the eye it should be sharp, rapid and heavy. In the ear it should start little and be gradually increased.

C. GURNEE FELLOWS: Is your massage always exhaust and break?

DR. SOULE: Yes, sir, I start with a to and fro motion and then change to suction and break. The latter does not exceed five minutes at first. The next treatment lasts about seven minutes. The next time I increase it two minutes, and increase the strength of the massage a little, and so on until the time of the treatment is about forty minutes.

THE TREATMENT OF HYPERTROPHIED TONSILS AND OF ADENOID VEGETATIONS FROM THE STANDPOINT OF THE RATIONAL HAHNEMANNIAN THERAPIST.

RUDOLPH F. RABE, M. D.,

New York.

MUCH has been said and more has been written upon the treatment of hypertrophies in the nasopharynx, until it would seem that nothing is left to predicate of this trite subject. So far as we, as homœopathic physicians in general or special practice, are concerned, the subject appears to have a perennial interest, since whenever it is projected into the sea of discussion which always rages around it the time honored differences of opinion are patriotically voiced, only to add to the general befogging of the question. For on the one hand is the specialist whose interest lies entirely in the direction of surgical procedure and whose aim is the perfection of his mechanical technique employed in the eradication of the pathological offender, while on the other hand stands the medical extremist who boldly proclaims that all cases can and should be cured by internal remedies alone, or that all of his cases at least have been so cured.

It may not therefore be amiss for one less inclined to swing to either end of the therapeutic pendulum, to venture upon the more placid current between the Scylla of Surgery and the Charybdis of Extreme Dynamics.

From the rational Hahnemannian point of view disease does not consist in mere pathological entities, but rather in the subtle though no less recognizable manifestations of disease activity called symptoms, whether these be subjective, objective or both. That these symptom manifestations, if left to themselves and allowed to proceed in the natural order of their inevitable development, will eventually ultimate in gross pathological tissue change cannot be denied. Once however this end-product of morbid activity has been completed, the symptom gamut of the patient has well-nigh been run and those symptoms which will now occur are largely mechanical or else reflex in nature and effect. Hence these latter manifestations no longer mirror the patient himself but only reflect his ultimate tissue changes.

Remedies do not cure diseases, but by assisting deranged or altered metabolism cure patients in whom disease is manifested. Therapeutics to be truly curative and not merely palliative or mechanical in nature must be based upon this fact, a thorough understanding of which does much to reconcile otherwise apparently opposite or diverging views.

It is a fact, perhaps difficult to explain, but nevertheless easily recognized, that children born with certain constitutional tendencies, whether these be called tuberculous, scrofulous, psoric, sycotic or what not, do develop glandular enlargements, tonsillar hyperplasias and adenoid vegetations. In these patients the very constitutional conditions which permit or encourage such hypertrophies are themselves the essential aids in indicating the means for their relief, and taken together with parental idiosyncracies, where these can be obtained, form a therapeutic basis for the successful prescription, administration and action of the needful remedy. It is therefore in such cases that the pathological excrescences under consideration can be arrested in growth and caused to disappear by curing the patient of the causal tendencies which give them birth.

Here it is that the barytas, the calcareas, the nosodes and other polychrest constitutional remedies perform really miraculous cures, and their selection permits the exhibition of scientific accuracy, whilst their administration in even the highest potencies is so eminently successful.

The picture, however, has its obverse side and frequently presents a pathological state annoyingly destitute of any accompanying constitutional symptom complex. Nothing but the local expression presents and curative prescribing is seen to be an impossibility or, if attempted, a blind empirical effort best described as unscientific guesswork. Here therefore the administration of remedies, no matter whether in crude, low or high potencies, is bound to be disappointing in results, unless perchance, as sometimes happens, quite accidentally the remedy finds its affinity in the hitherto unexpressed constitutional state, and so cures both the original cause and its pathological end product. In these cases surgical intervention, by virtue of the damage done through mechanical interference with respiration, circulation or other function, becomes a matter of necessity, in the consideration of which prejudice should have no part. Here the skill of the specialist may be displayed to advantage and his perfect work followed by the happiest results.

It is true that in this class of symptomless cases an acute inflamma-

tory exacerbation will sometimes disclose the truly curative remedy for the chronic state, although in the experience of the writer, at least, such acute attacks more frequently leave in their wake an increase of the trouble. It is furthermore also true that, following upon surgical operations, symptoms will arise which demand most careful prescribing and which had not existed before, showing that the latent force of the disease has been aroused to renewed activity. More often, however, the occurrence of such postoperative symptoms means that although in reality previously present, they had not been recognized. For surgical measures to be entirely successful, the patient to whom they are to be applied must have been previously shorn of his basic symptom picture, in a word cured of his various constitutional symptom manifestations by careful prescribing directed at the patient himself. His pathological outgrowth or morbid end-product nevertheless remaining, operation alone can be of aid.

The plea is therefore herewith presented that such cases which form the topic of this brief essay be viewed more philosophically and with the right perspective, which a study of homœopathics alone can give, by both physician and surgeon, whether in general or special work engaged. Each has his place and part to play and both should be harmoniously and mutually dependent. By occupying this position, entirely rational and logically tenable, the occasion for misconception, misunderstanding and extravagant statement will be at one stroke removed.

616 Madison Ave.

DISCUSSION.

CHAS. H. HUBBARD (Chester, Pa.): Notwithstanding the introduction of an old subject, Dr. Rabe's paper is entitled to the highest consideration.

Though the statement is made that the interest of the specialist "lies entirely in the direction of surgical procedure and whose aim is the perfection of his mechanical technique," we do not believe that Dr. Rabe really intended to charge the specialist with being more mercenary and less humane than the nonspecialist. However, it is possible the inferred indictment as charged may be sustained in some isolated cases. On the other hand we believe that the law of Similia is almost universally recognized by the homœopathic specialist. But it is a fact that will not down, that the busy ambitious specialist needs to be on his guard, as the very nature of his professional activities tends to the develop-

ment of thought and action along material lines rather than medicinal; the operator who simply sees "mere pathological entities" and persistently ignores homœopathic therapia fails to attain the highest degree of success.

"The medical extremist who boldly proclaims that all cases can and should be cured by internal remedies alone," is not wholly beyond the province of criticism, and it is unquestionable that such dogmatic claims have brought our system of practice into contempt and injured the cause of homœopathy. The attempt to force the law of Similia into fields utterly foreign to the clear and unmistakable doctrine of Hahnemann, and clearly unwarranted by results, should find no place in the armamentation of the rational exponent of our system of therapeutics. The remarkable achievements and the still greater possibilities in homœopathic treatment are a matter of pride and continued hopefulness. May the ranks of the "Rational Hahnemannian Therapists" never grow less. But it is essential to remember that notwithstanding the indicated remedy may accomplish all its most skillful prescribers claim for it, while for it to remove the "deranged or altered metabolism" the damage done the patient by such prolonged waiting may be far beyond human computation. In such cases as those under consideration, though amenable to homœopathic treatment they are materially assisted by an early operation that insures free respiration. It is not too much to claim that in the above pathological conditions the best results assuredly follow a co-ordinate action of surgical and drug therapia.

THOMAS L. SHEARER (Baltimore): Whenever I am called upon to discuss either tonsils or adenoids I feel inclined to offer an apology to the members of this society. The subject has been so often presented to the profession that nearly every specialist is weary of the topic. There can be no reasonable doubt that the lymphoid tissue in the faucial nasopharyngeal region is placed there for a definite purpose; we may not be certain of its function, but that does not excuse us for considering such tissue as useless.

As medical men we constantly have patients consulting us for adenoid or tonsillar troubles and we then encounter lymphoid structures altered and hypertrophied by infectious processes; in other words tissues engaged in combating the entrance of toxins or the micro-organisms themselves into the deeper lying protective system—the lymphatic glands. In this condition we are confronted with pathological products, obstructive masses interfering with respiration, with drainage, and worse than all acting as centers of infection. Surgical procedures are certainly indicated in these cases.

There is another very simple and yet important adjuvant treatment which is necessary to have carried out following the operation if the results are to successful, viz.:—the care of the mouth and teeth and the diet. It is now recognized that between the teeth and all over the dorsum of the tongue there are myriads of all kinds of bacteria swarming.

If due care is not exercised to keep these parts clean, infection of the tonsils and adenoid tissues readily occurs. For this purpose some good tooth powder, such as Harris's, should be used on a brush night and morning, brushing vertically between the teeth as well as over the inner and outer surfaces of the teeth. Then a solution like Harris's Carbolic Mouth Wash should be gently brushed over the dorsum of the tongue, followed by thoroughly rinsing the entire mouth with a few drops of the same solution in some tepid water or, if the breath is foul, with as hot water as the mouth will comfortably bear.

This keeps down bacterial activity. Next in importance to this is the question of diet. Cane sugar is above everything else to be prohibited except in small quantities to flavor food; candies, caramels, syrups, cakes, soda water messes sold in drug stores, ought not to be given to children—particularly after operations on the throat. Living out of doors and following these directions should do the rest. Now this simple view of the subject apparently minimizes the so-called constitutional cases. I believe that all children are born practically with the same amount of lymphoid tissue; but in children born of parents who are frail or possibly suffer from tuberculosis the power of resistance of the child's lymphoid tissues is greatly diminished, infection occurs more readily, the lymphatic glands become involved in their endeavor to arrest the poison and we say significantly (?) "the child has a scrofulous or tuberculous diathesis." The key note here is the digestive tract and the nutrition of the patient, fresh air and the removal of the infectious centers. Stillingia sylvatica, baryta, calcarea iodide and arsenicum iodide are my mainstays after all of these measures have been carried out.

DR. RABE: My attention had been called to this trite subject by the fact that in co-operating with my specialist friends I had observed that although the operation was beautifully and successfully performed the trouble tended to recur. I came to the conclusion that the mechanical procedure did not touch in the least the basic element or cause of the trouble; that was not touched by the operation. I desired to bring out the fact that in order to do the best thing for our patients we needed to combine therapeutic means with operative procedures.

As homœopaths we must treat the patient rather than the disease. Dr. Hubbard's charge that I talked of or from mercenary motives may be dismissed with a wave of the hand. The point is that we must regard the patient as a living organism, as a whole, and not think that the removal of the disordered part—the end product of the disease—will cure *him*. There is not and there should not be any real differences between the specialist and the Hahnemannian prescriber.

ACUTE RETROBULBAR NEURITIS.

A. B. NORTON, M. D.,

New York.

AT about the time of selecting a topic for this meeting I was especially interested in a case of retrobulbar neuritis, and thereupon decided to report this case as one that might prove interesting to the members of this Society.

December 30, 1907, Mr. W. B. W., lawyer, age 35, came to me complaining of a slight cloud or mist before the left eye. Examination of the central vision gave $^{15}/_{12}$ in each eye, and as the ophthalmoscope showed no evidence of any trouble nothing serious was suspected. The following morning the patient returned complaining of increased haziness. The vision in that eye was $^{15}/_{12}$ great difficulty. No sign of intraocular lesion, but as he had been smoking from ten to twelve cigars a day he was advised to discontinue smoking and nux vomica was prescribed.

January 2, 1908, just three days after first noticing the mist before the eyes, the vision had failed to $^{15}/_{40}$ great difficulty. On this date the field was taken and found very greatly contracted for red and green and a marked central scotoma present; there was slight pain on movement of the eye; the eyeball was sensitive to pressure backward; the iris somewhat slow in its reaction to light. The diagnosis was then made of retrobulbar neuritis and bryonia, together with three grain doses of potassium iodide, given.

At this time a thorough search for the cause of the trouble was initiated. There could be discovered no evidence whatever of either acquired or inherited syphilis. No exposure to colds, infections or toxic diseases, and no assignable cause excepting possibly overwork and perhaps the slight excess in the use of tobacco. In an effort to find a more positive cause, at my suggestion Mr. W. consulted several different specialists; first a neurologist who thought the trouble one of hysterical amblyopia, then a general consulting physician who went over him thoroughly giving him a clean bill of health in every particular excepting that he thought there was a peculiar appearance of

the ears and suggested consulting an aurist. He was then referred to a prominent aurist who confirmed the diagnosis of retrobulbar neuritis, reported the ears practically normal with no causative relation to the condition of the eyes and advised consulting a rhinologist for a careful examination of the posterior ethmoid and sphenoid cells on that side. This was done with the report that absolutely nothing could be found excepting a slight hypertrophy of the inferior turbinated bodies.

By January 10th the vision had steadily failed to mere perception of light, the pupil widely dilated. The iris does not respond to direct light but reacts very slightly consensually; the pain on movement of the eyeball and upon backward pressure on the eye is still present but not excessive. There was at this stage very slight optic neuritis.

The early diagnosis of hysterical amblyopia had by this time become positively excluded by the dilated pupil, the absence of all response of the iris to either direct light or consensual contraction, and the absence of diplopia in all tests.

On January 15th the first sign of improvement was noticed when he was able to count fingers at twelve inches. From this date there was rapid and steady gain and the records show that on February 20th central vision had returned to $^{15}/_{12}$ with slight difficulty. The color fields had improved but had not returned to normal. The patient still complains of the fog. The ophthalmoscope reveals some paleness of the disc, consequently we can expect no further improvement. The results were exceptionally favorable in this case and were undoubtedly due to the perfect physical condition of the patient and to the rapid course of the disease.

The treatment consisted of at first daily, later less frequent, applications of the leucodescent lamp, small doses of kali iod., bryonia, pulsatilla, mercurius prot. and nux vomica.

The especial point of interest was our prevailing search for the cause. In looking up the subject I find comparatively little in our current literature. Among the recognized causes of retrobulbar neuritis are the following: syphilis, rheumatism, gout, the exanthemata, influenza, sudden suppression of the menstrual flow, wet and cold, exposure and overwork, alcohol, nicotine, opium, lead, etc.; secondary to other orbital diseases, extension from diseases of the neighboring cavities; but none of these conditions were present in sufficient prominence to be assigned as the cause. The patient had been using his eyes

at some fine work just before the trouble of the eyes set in, but this or the slight overwork in one of his excellent physical condition I cannot believe caused the trouble. Neither can I attribute the onset of the disease to the smoking of ten or twelve cigars per day, but there was absolutely no evidence of any other cause.

In Norris and Oliver's System of Diseases of the Eye it states "Generally both eyes are affected. In less violent cases only one eye is involved, usually the left one." It was the left eye that was involved in my case, but *why usually the left eye?*

Gunn in a paper upon Retrobulbar Neuritis before the British Medical Association in 1904, says "Recovery takes place in about six weeks from the commencement of the attack, and exceptionally no recovery at all. Pain is frequently complained of and if it persists prognosis is more grave. Tenderness of the eye to touch indicates inflammation far forward and is favorable. Pallor of the disc is practically universal." All of these statements were borne out in my case as the disease was terminated in about six weeks, pain was slight and only complained of for a few days, tenderness on pressure and pallor of the disc were both present.

Uthoff reports 120 cases and in more than one-half of them he could find no cause.

Bregman, *Wiener Med. Wochen.*, Oct. 6, 1900, says the differential diagonsis between acute retrobulbar neuritis and hysterical amblyopia is often very difficult. The central scotoma which is especially characteristic of the disease is often absent in neuritis where vision is rapidly lost. In hysteric disturbances of vision there is generally a concentric contraction of field with more or less loss of central vision; generally both eyes are affected but in some cases the disturbance of vision is one sided and may lead to complete blindness, as in neuritis. Sometimes there are headaches and pain in the eyes. The important difference is the reaction of the pupil.

Nettleship in the Royal London Ophthalmic Hospital Reports for May, 1899, has given the best description of the disease that I have been able to find. He says the field is involved in various degrees, but the central part is always affected, the scotoma often spreading out like a fan from the fixation point. In hysterical amblyopia a central scotoma is very rare. The failure of sight is usually rapid, the climax being generally reached in from one to five days; but it is never really sudden

as in embolism, etc. Failure of vision varies from slight mistiness to total loss of perception of light, but recovery is possible if improvement sets in tolerably soon. Light sense is impaired. Pain spontaneous or caused or increased by movement or pressure on the globe. The pain is a very common sign; it usually precedes the loss of vision and ceases when or soon after this occurs. The reflex action of the pupil to light is lessened. He divides into two classes:—*Idiopathic* when the disease starts in the nerve itself and *Symptomatic* where disease is communicated to the nerve by the surrounding tissues. Ophthalmoscopic changes in the *idiopathic* group are present almost from the first, while in some of the worst *symptomatic* cases no change can be detected in the disc for some weeks. Later on there is almost always some pallor of the disc. It is a disease of the most sexually active period of life, the twentieth to the fortieth year, and at this period women are affected more than twice as frequently as men. Syphilis is rare in the idiopathic, but present in about one-half of Nettleship's symptomatic group. Often functional or organic disease of the nervous system is present.

The cardinal points in diagnosis are—mode and rapidity of failure of vision, pain, the pupil, acuteness of vision, the field especially central, ophthalmoscopic appearances.

Retrobulbar neuritis of exceptionally rapid onset and high degree may be confused with thrombosis of a branch of the retinal artery or hemorrhage into the sheath, but retrobulbar neuritis is rapid in its onset while the others are sudden.

Hereditary retrobulbar optic neuritis has frequently been reported and Heinsberger in 1902 refers to 307 cases that had been described up to that time. The hereditary form however seems to assume the chronic rather than the acute type of the disease.

16 W. 45th Street.

DISCUSSION.

J. M. Hinson (Boston): I have had no analogous case. Among a number of active retrobulbar inflammations I have had a few that might be placed under the head of acute neuritis but the cause has always been demonstrable, either syphilis, tobacco or quinine. The quinine amblyopias have been the most unsatisfactory in their outcome. Dr. Norton does not feel like attributing this case to ten or twelve cigars a day. His experience with the weed is probably, and I know his experience in the treatment of ocular diseases is, far greater than my own yet I cannot help but feel that we have a very probable cause

in the cigars. Personally I should be prepared for an Ex—itis if I smoked ten cigars daily. On the other hand one would hardly expect vision to drop from $^{15}/_{12}$ to light perception in ten days under nux vomica as the remedy with the tobacco discontinued. Under this treatment I have yet to see a case in which the decrease in vision failed to be checked or actually improved within a few days. As there is no record of the ophthalmoscopic appearance from December 30th to February 20th, when paleness of the disc is recorded, I should like to ask Dr. Norton if we are to infer there were no fundus changes until the appearance of atrophic change in the disc, and whether this paleness was general. My observation has corresponded with the statement of the various authors that the changes are usually in the lower temporal quadrant. According to Nettleship's classification Dr. Norton's case belongs to the symptomatic type, in which the disease starts in tissue surrounding the nerve. In the idiopathic group the ophthalmoscopic changes are present from the onset.

C. JOSEPH SWAN (Chicago): Did the patient stop the use of tobacco?

DR. NORTON: He did. I know that tobacco amblyopia usually comes on slowly and that this case was a sudden one, but tobacco was the only possible cause I could think of, although I felt that it did not quite fill the bill.

EDGAR J. GEORGE (Chicago): Nicotine poisoning comes on gradually, and generally in patients who have passed middle age. The toxic effect of tobacco and alcohol upon the eyes is gradual. Retrobulbar neuritis also comes on as the result of great mental or physical strain. I had one case, a young man who entered an athletic contest; immediately after severe straining the vision of the left eye failed and did not return.

Another case was that of a young woman who belonged to a pleasure club. At one of the entertainments she was on the committee of arrangements and refreshments; she worked over the stove in the rear of the ball-room nearly the entire evening, dancing between times. She started home in a perspiration, became chilled, and had an attack of retrobulbar neuritis in the left eye; under treatment she recovered. A year later she went through the same performances and had another attack.

I also remember a case in a man who worked hard all day and watched over a sick mother at night. This was followed by an attack of retrobulbar neuritis, first in the left eye and later in both eyes; this case also recovered. The remedy that served me best in these cases was duboisin 3x.

G. W. MACKENZIE (Philadelphia): I cannot see, from a theoretical standpoint, how tobacco could be responsible for this case of neuritis. In the first place one eye only was affected and that is a point against the tobacco being causative: second, the papillitis points against tobacco; and third the pain seems to me to be against tobacco as a cause, for

the reason that the optic nerve is not a nerve of sensation and when there is pain in the orbit it would indicate that there was pressure upon a sensory nerve. The nerve affected would be the ophthalmic branch of the fifth nerve; that is not the way that tobacco nor wood spirit nor lead act. The doctor was liberal enough to let all the specialists have a chance at the case, but I would rather doubt the exclusion of ethmoiditis as the cause of the trouble. Of course this is judging a case that I have never seen or examined.

J. A. CAMPBELL (St. Louis): This peculiar case shows some features that my experience has never come across: I never saw a tobacco amaurosis with a pale papilla; again, if there were retrobulbar neuritis there would have been pressure and pressure would have produced turgescence of the veins in the fundus, which, as I remember the paper, was not present. I think that nine-tenths of the cases of amaurosis caused by tobacco and assisted by alcoholic drinks, have this feature. It is strange too that the trouble should have occurred in one eye; the suddenness of the onset was unusual. So also is the sudden return of the sight unusual. Yet I am at a loss to give a better reason for it. From the absence of other causative factors one is driven to the conclusion it was due to the tobacco.

I have had a case of tobacco amaurosis in a boy of nineteen from cigarette smoking; it comes on slowly and it goes very slowly. I am glad that one does not have to take an oath as to what is the exact diagnosis of cases like these.

I. C. SOULE (Kansas City): I did not hear all of this paper but judging from the discussion there is some question concerning tobacco amblyopia. The portion that I heard makes me agree with Dr. Mackenzie. I had a patient coming to me with a history of dimness of vision coming on suddenly, followed in five days by total blindness. There was very little to be seen ophthalmoscopically; the disk was slightly pale. After close questioning I found that the patient had been troubled with postnasal discharge. On examination I discovered that the sphenoid was involved on that side.

Operation on the sphenoid was followed by improvement in vision until it went up to about two-thirds. Three months after this discharge he returned with the vision in the other eye much reduced; the cause seemed to be an exposure; while returning home from an entertainment he had become drenched in a cold rain. The trouble was again in the sphenoid on the other side; operation on that side restored perfect vision. There was no pain referable to the eye in this case, but there was some protrusion of the eyeball in the first attack. I had the patient examined by two other men in the city with the result that they both pronounced it a case of retrobulbar neuritis.

H. S. WEAVER (Philadelphia): I had the great pleasure of seeing this case of Dr. Norton's but not until it was nearly well. He came over to visit a twin-brother in Philadelphia who promptly brought him to me

to examine. I thought of nasal disease as the possible cause of the trouble, but at the time I saw him he was absolutely free from any such trouble. There was nothing in the nasal passage to account for it.

DR. NORTON: I will answer Dr. George in regard to physical strain by saying that there was no physical strain in this case nor was there any severe strain upon the eyes. It is true that he had been using his eyes for some fine work but there was not anything approaching a strain. The patient was in perfect physical condition and there was absolutely nothing in his history of a specific nature. As to tobacco, I do not suppose that it had anything to do with the eye trouble, because this was an acute condition and my experience with tobacco poisoning is that it produces a slow chronic failure just as we have with alcohol and other drugs of that kind.*

The pallor of the disk was not present in the early stages, it appeared late. There was no papillitis at any time, only a slight degree of congestion, very slight indeed. The tobacco was discontinued from the start, and I see no reason why the trouble should have increased for ten days afterward if that was the cause of it. In regard to the nasal passages, the patient was sent to the best nasal specialists in the city and word was sent back that there was no nasal trouble of any kind.

The pain can be explained without bringing in the ophthalmic branches of the fifth; inflammation of an acute character in the nerve back of the eye-ball somewhere, would be sufficient to explain that. Amaurosis may come in one eye only, notwithstanding what has been said here to the contrary; if the trouble is situated between the eye-ball and the optic tract on one side the blindness and pain would be on that side only. This is a condition that will give us sensitiveness and pain and it is one of the characteristic symptoms in my experience. I know of no possible explanation of why the left eye should be affected in preference to the right.

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*Probably eight or ten cigars were sufficient to cause the retrobulbar neuritis in conjunction with some unascertained combination of exciting causes. Dr. L., a moderate smoker, one evening worked late and smoked three or four stronger cigars than usual, and the next morning suffered a severe attack of acute nicotine heart poisoning. Since then, two or three years, a slight excess of tobacco will promptly blur his vision, which passes off in about twenty-four hours upon letting up with the tobacco. He says he has heard of a similar case.—EDITOR.

THE RELATIONSHIP BETWEEN RHINOLOGY AND ORTHODONTIA.

DEAN W. MYERS, M. D.,

Ann Arbor, Mich.

IN the brief consideration of this, to me, exceedingly interesting subject, it is not my desire or intention to enter at all into a technical or hypothetical discussion, rather do I hope to suggest some practical ideas, and my purpose shall have been accomplished if the effort results, some time, in profit to a few at least of our little patients.

Like the "poor that are ever with us" so are we always surrounded by a horde of unfortunate victims of abnormal respiration. Nature is a wonderful builder, but in this particular she has seriously missed the "plane." Consequently to our lot comes the responsible work of building over, and to this end our colleague in human effort, the orthodontist, has come forward with invaluable assistance; it is to suggest his usefulness to ourselves and our patients that I attempt a presentation of this subject.

MOUTH BREATHING.

It has remained for this brother of ours, the orthodontist, to call our attention to the fact that mouth breathing may result from other causes than nasal or pharyngeal obstruction. He has been able to tell us why so many of our "brilliant" operations in the nose and throat have failed utterly to establish normal respiration, and he has also been able to show us that mouth breathing with open nasopharynx is not entirely due to that much abused term "habit." I venture to say that there is not one within the radius of my voice today who has not had one or more occasions in which he has said to the waiting parents: "Your child has no adenoids, its tonsils are normal and its nasal passages are free, therefore, it must breathe thru its mouth *purely* from *habit*." I will also venture that when alone, thereafter, he has asked himself in good faith: "What is habit mouth breathing? Why should it be, when the nose was clearly intended for the purpose?" I confess the ortho-

dontist has answered this oft repeated question for me; to him I am indebted and to him I feel grateful.

For convenience in considering this subject, let us divide mouth breathers into two classes:

CLASS 1.—Those who breathe thru the mouth because of some nasal or nasopharyngeal obstruction, as nasal hypertrophies, adenoids or enlarged tonsils.

CLASS 2.—Those who breathe thru the mouth, but are found to have normal nasopharyngeal passages; in other words, those who breathe thru the mouth because of an abnormal development of the dental arches resulting in malocclusion of the teeth.

Further, class 1 may be subdivided into two divisions:

DIVISION 1.—Nasal obstruction with normal dental arches and normal occlusion of the teeth.

DIVISION 2.—Nasal obstruction resulting in abnormal development of the dental arches and malocclusion of the teeth.

Class 2 may also be subdivided into two divisions:

DIVISION 1.—Irregular development of the dental arches due to nasopharyngeal obstructions, these obstructions having remained long enough, before removal or disappearance, to act as etiological factors in the abnormal shaping of the arches; and,

DIVISION 2.—Irregular dental arches and malocclusion of the teeth in which malnutrition, infantile congestive obstructions or faulty ossification processes have been etiological factors.

Etiological Factors.—As to the etiology of adenoids and other lymphoid hypertrophies, I purpose simply to suggest two classes which will, I think, be self explanatory; *i. e.*, 1st. Those due to hereditary or constitutional influences, and 2d. Those resulting from external influences, as repeated attacks of "cold in the head," influenza, acute febrile diseases, etc., *ad lib.*

To take up briefly class one—cases of mouth breathing due to nasal or nasopharyngeal obstruction and its two divisions, *i. e.*, those with (1) normal, and (2) abnormal dental arches—we find the subjects who possess normal dental arches, but an occluded nasopharynx will prove to be the ones in which the lymphoid hypertrophies have developed after the twelfth to fifteenth year, and are consequently due to external causes, as mentioned above. This class of cases is rare, being supplanted by the much more common division in which nasal or nasopharyngeal obstruction has appeared much earlier and is found to be

accompanied by an abnormally developed dental arch. This type of dental deformity resulting in malocclusion of the teeth is easily accounted for, and the explanation which I shall make use of is by no means new.

I agree with Bogue, of New York, that too frequently the import-

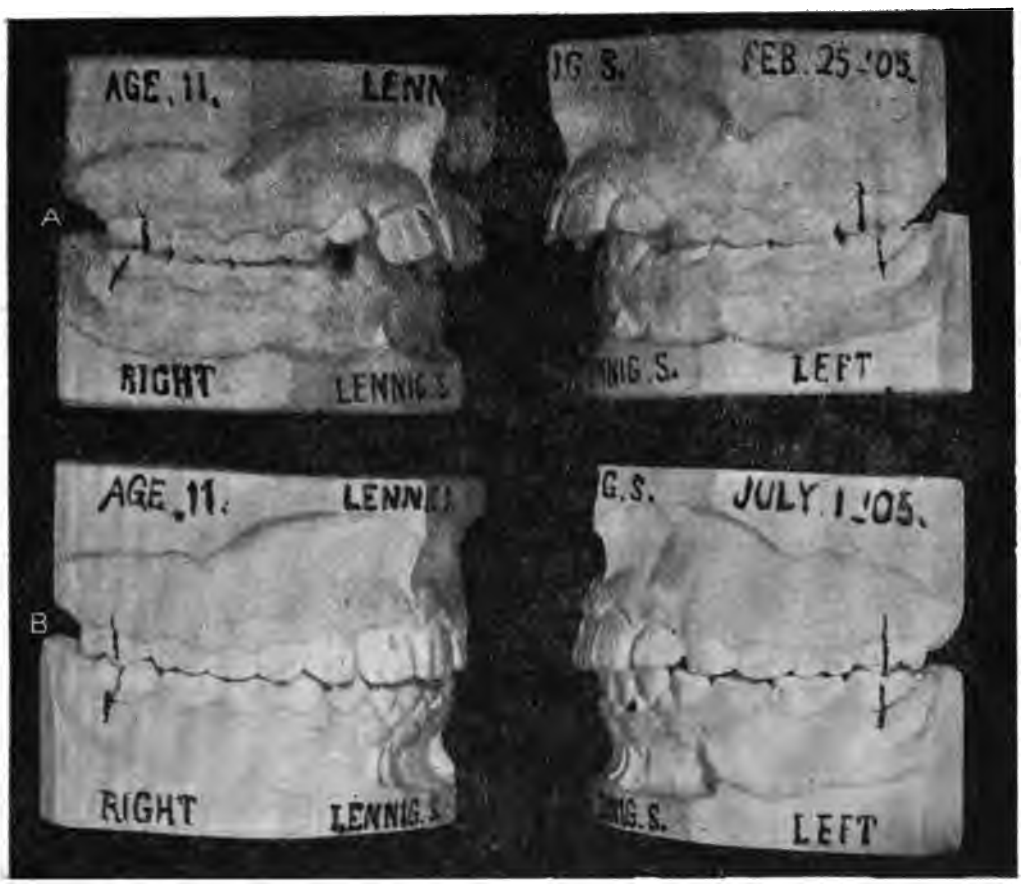

FIG. 1.—Models illustrating protruding upper and receding lower incisors before and after correction.

ance of the muscular action of the tongue in the development of the superior maxilla is overlooked. The tongue is one of the most, if not the most, powerful muscle or group of muscles in the whole human body. Its great strength is encountered every day by rhinolaryngolog-

ists and orthodontists the country over. Its normal position when the mouth is closed and nasal respiration is taking place, is *pressed* against the roof of the mouth and laterally against the inner surfaces of the alveolar processes. It must not be forgotten that these processes are, in these subjects, pliable and subject to the greatest diversity of shape due to slight external influences. Therefore, The Great Creator intended that in the process of normal development this muscular influence should be constantly exerted from within to widen out and bring

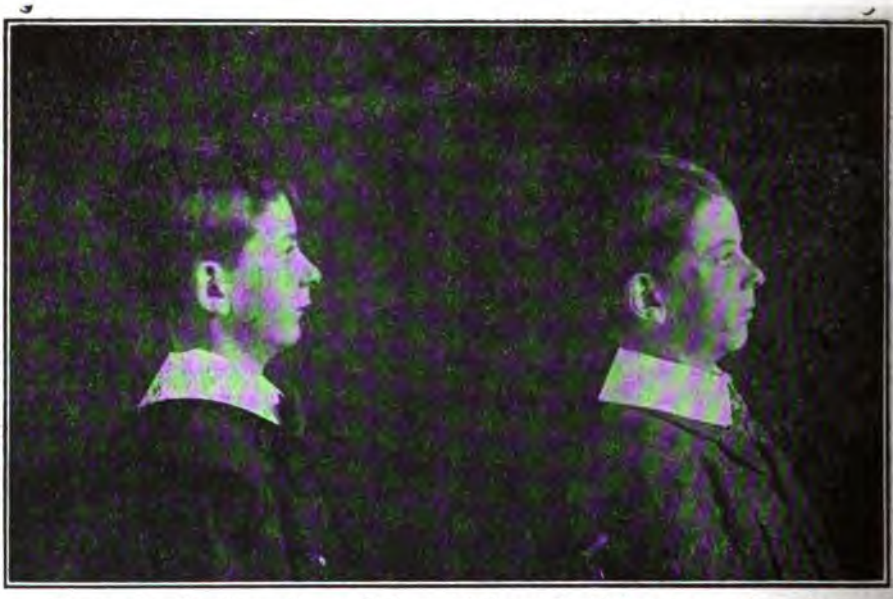

FIG. 2.—Profile of case from which model A and B of Fig. 1 were taken, showing the great improvement in facial outline as well as normal closure of the mouth.

into opposition the upper arch with its fellow, the mandible. Open the mouth for purposes of respiration and this muscular pressure is at once removed to the floor of that passage, and the maxillary arch, from lack of support from within and with pressure from without, becomes narrowed and elongated and the protruding upper incisors, so familiar to us all, is the result. This condition accompanies nasal obstruction usually without tonsilar enlargement. Early and continued hypertrophy of the faucial tonsils, resulting in the extension forward of the lower jaw to open the oropharynx, gives us the prominent chin and

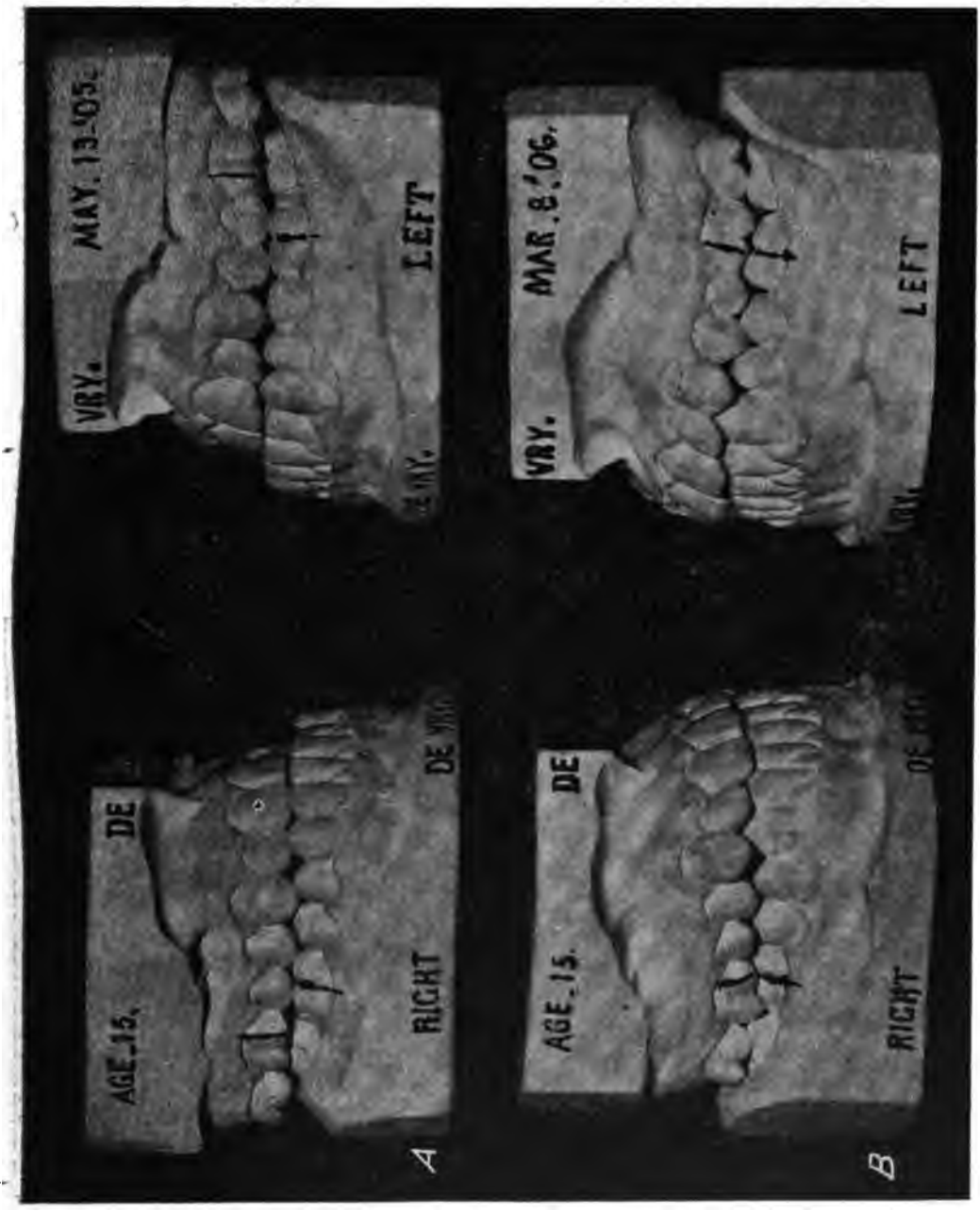

FIG. 3.—Illustrating the protruding lower jaw of the so-called wapper-jawed individual. Seen also in profile and front views (before and after treatment) in Figures 4 and 5.

FIGURE 4.

FIGURE 5.

receding upper lip of the socalled wapper jawed individual, except, perhaps, in such rare cases of protuding lower jaw as are clearly due to accidental dental causes.

Considering briefly the second class of cases, *i. e.,* mouth breathers who have normal nasopharyngeal passages, or in other words those who breathe thru the mouth because of abnormal dental arches and resulting malocclusion of the teeth, it will be noted that the first division of this class of individuals are the incomplete results of rhinological efforts upon cases in division two of class one, in the above classification, adenoid, etc., having been removed, but dental deformities still remaining.

The second variety will be found to be those having irregular dental arches and consequent malocclusion, but no history of nasal obstruction will be obtainable, and I have ascribed to this variety as etiological factors, malnutrition, infantile congestive obstructions and faulty ossification processes.

This second class, with its two divisions as mentioned above, *i. e.,* those in which mouth breathing persists after normal nasal passages have been established and continues in spite of efforts innumerable to "break the habit," is the "exciting cause" for an attempt on my part to present this subject to you today. With the malocclusion developed, of whatever type, whether it be the protruding upper incisors with receding chin, or the protruding lower jaw with depressed upper lip, or that other common type in which the jaws are very much underdeveloped and the teeth crowded and overlapped, the result must be the same and nasal respiration will not take place, no matter how free the nasal passages may be. In the first case, the protruding upper incisors project beyond the lower lip, which, without the patient's volition, slips up behind and underneath these teeth creating an air passage by means of which the mouth is soon forced open and oral respiration follows. With the projecting lower jaw the same process, reversed, results. The upper lip recedes behind the prominent lower incisors, and air at once passes within and the jaw drops in spite of the patient. In the type in which the jaws are very much underdeveloped, there will be found a corresponding narrowing of the nasal passages rendering nasal breathing difficult. Therefore, to sum up, *nasal respiration cannot be maintained when closure of the mouth is secured at the expense of an effort, this constant effort being necessary when malocclusion of the teeth is present.*

FIG. 6.—Showing an underdeveloped jaw with teeth crowded and overlapped. A corresponding narrowing of the nasal passages accompanies this condition.

Prognosis.—As rhinologists we have always been ready to predict splendid results from removal of adenoid tissue, hypertrophied tonsils or any existing nasal deformity. We have pictured in glowing terms the splendid results of our many ministrations and the brilliancy of our numerous surgical sallies upon these little unfortunates. But have we not, many times, within the confines of our own consciences admitted our utter defeat? Great as may have been the necessity for our part in the performances, and faithfully as we have carried it out, has it not been the lot of all of us, on many occasions, to find ourselves confronted by absolute failure to establish that for which we set out? And have not many, many of our patients gone on breathing thru their mouths continuously after we have heroically removed "everything in sight."

From the orthodontist's standpoint the outlook is coming to be much less gloomy. Without the rhinologist to remove respiratory obstructions his work would be a failure, and so without the orthodontist to correct the dental deformities in our mouth breathers we have been doomed to defeat and will continue to be so doomed until we recognize him and make him our most valuable assistant.

It is now a well recognized fact that the bones of the face and jaws are susceptible to great alterations in shape if taken at the proper time of life. Dentists recognize the possibility of influencing the growth and position of the second set of teeth by giving early attention to the primary set. Thus what might become an irregular maxilla containing misplaced teeth, failing to occlude with their fellow opponents of the lower jaw, may be developed into a normally formed process by proper regulation of the first set.

With these facts before us it will be much easier to make a favorable prognosis as to complete relief from obnoxious and health impairing mouth breathing.

Treatment.—In the treatment of mouth breathers, two objects should always be kept in mind:

1st. The establishment of a free, open, normal nasopharyngeal passage for the air.

2d. The procuring of a normal occlusion of the teeth, or as nearly so as possible, that nasal respiration may be maintained.

The methods for the first requisites are so well known to all present that comment upon them is wholly unnecessary. For the second a few words may not be amiss.

Dr. Angle—a celebrated orthodontist, the first to discover the upper first permanent molar as a fixed point in the arch from which to make a diagnosis—speaking from the standpoint of his profession, says that "in the treatment of all cases of malocclusion our efforts should be toward the accomplishing of three main objects:

First, correction of malocclusion.

Second, establishment of harmony in the relation of the jaws.

Third, improvement of the facial lines. In the accomplishment of these, our efforts should be toward the ideal, where normal occlusion, normal relation of the jaws and harmony of facial lines are combined. While the ideal is not always possible to attain, yet the best attainable results cannot be hoped for with a lesser standard."

To these I would add a

Fourth, *i. e., the establishment of normal respiration.*

Indeed, I would class this as the first and most important object to which all efforts of both rhinologists and orthodontists should be directed. In this day of progress, when we are hearing so much about the great white plague and the noble battle being waged against its ravages, it seems to me that we cannot do better than to consider seriously the influence of abnormal respiration as an etiological factor in the development of pulmonary tubercular affections, for where better can the treatment of phthisis pulmonalis be commenced than before the disease has actually begun? I believe that all our efforts toward the stamping out of this great scourge will be of no avail until we recognize the importance of, and meet the conditions existing before the disease has actually started.

To this end we must recognize the great importance of the normal functions of the nose. As is well known, its principal duty, so far as respiration is concerned, is to warm, moisten and filter the inspired air. We know that at 32° F. air, to be saturated, requires 2.1 grains of water to the cubic foot. According to Aschenbrandt and Kayser, the inspired air receives from 20° to 40° of heat and becomes saturated, or nearly so, in its passage thru the nose. This renders it suitable for the interchange of oxygen and carbonic acid gas in the lungs, a simple action of osmosis which takes place most perfectly when with warm fluid on one side of a membrane there is warm, moist air on the other. Bosworth concludes that the nose must supply in twenty-four hours about a pint of moisture for this purpose, which it obtains from the sinus tissues of the turbinates, together with the tears and the secretions of the muciparous glands.

The function of the nose in filtering the inspired air is practically perfect, Tyndall having demonstrated that expired air is free from germs. St. Clair Thompson and Hewlett, a few years ago, concluded that the nose does not offer as fertile a soil for micro-organisms as does the oropharynx, for according to their researches the occurrence of micro-organisms on the Schneiderian membrane is so infrequent that their presence must be regarded as quite exceptional. Paget confirmed these results, finding the nasal cavities in the normal state free from microbes except at the anterior part and vestibule. He concluded that the asepsis of the nasal cavities is due to the structure of the canal, to the ciliated epithelium, and to the germicidal quality of the mucus, which he found was absolute for anthrax, very marked for the Klebs-Lœffler bacillus and less so for the staphylococcus and streptococcus organisms. Tyndall found that in the passage of the air thru the nasal cavities its cleansing was accomplished by the action of the vibrissæ, the hairs of the vestibules which hinder the entrance of large particles, and by the adherence of smaller particles to the moist surfaces of the intricate passages of the nose and the nasopharynx. These surfaces are in turn cleansed by the action of the ciliated epithelium and the flow of mucus.

Regarding the tubercle bacillus, Allchin in his Manual of Medicine has the following to say:

"The tubercle bacillus is the direct cause of the various forms of laryngeal and pulmonary tuberculosis. There are three modes in which this bacillus may gain access to the respiratory tract, namely, inhalation, ingestion and inoculation. By means of inhalation the bacillus is carried directly to the part which it affects. Numerous experiments have shown conclusively that the inhalation of air in which is suspended dried tuberculosis sputum will induce tuberculosis in even the most refractory animals. In the case of man it is by inhalation that the disease is most usually contracted, and we find that the lungs and bronchial glands are far more frequently affected with tubercle than any other parts of the body. A phthisical patient may, in the course of the day, expectorate millions of bacilli, and if he is careless in the disposal of his sputum must infect the place where he lives. It has been proved that dried sputum will retain its virulence for a long time. Experiments with dust collected in various quarters of Berlin by Cornet showed that nearly 33 per cent. of the specimens were infective, the dust being most frequently virulent in hospital wards and in private rooms occupied by consumptive patients. Recent experiments made by

Coates, in Manchester, show that in houses which have been occupied by careless consumptive invalids the dust is infective in more than 50 per cent. of the cases. In no instance was the dust of even the dirtiest houses found to be infective when no case of tuberculosis had occurred in them during the previous three years."

This being true, it is not difficult to conclude that mouth breathing may, in many instances, be directly responsible for pulmonary tuberculosis. With the nasal passages closed, the mouth is opened for purposes of respiration, and the heavily loaded air containing tubercle bacilli, streptococci, staphylococci, pneumococci, the Klebs-Lœffler bacillus and many more, is rushed directly into the larynx, trachea, bronchi and bronchioles.

So I repeat, that I would make first and most important in our treatment of these conditions, the idea of normal nasal respiration, that the air may be filtered, warmed and moistened before it enters the delicate tissues of the lungs.

Quoting from a recent article by Dr. E. A. Bogue, of New York, upon the relation of the dental arches to pathologic affections of the nasopharynx, we have the following:

"Now that we know something about the proper size and relations of the dental arches, we know how mastication should be performed to get the greatest degree of vigor from the food we consume, and we know what steps should be taken to permit the child afflicted with adenoids to close its mouth.

"Dr. I. B. Davenport, of Paris, discovered in 1886 what normal dental arches were; also that in civilized communities normal dental arches were rare. A few years afterward the late Dr. Bonwell, of Philadelphia, discovered that a mathematical relation existed between the width of the permanent upper central and lateral incisors and cuspid and the entire arch, and from the measurements of these three teeth he was able to construct the entire arch as it should be when normal.

"When thus normally arranged, it is found that all the teeth growing in one jaw articulate with the teeth of the other jaw so as to furnish largest area of grinding surface. The cusps and the sides of the cusps, and the sulci into which they fit, all combine to furnish not only the best masticulating surfaces, but to form dental arches that for strength and durability cannot in the human species be excelled. The cusps of all the grinding teeth in such arches, interlocking with their

antagonists, prevent any variation in position of any of the teeth laterally or anteroposteriorly.

"Dr. Hawley, of Columbus, Ohio, recognizing these facts, adapted Dr. Bonwell's discovery to the use of the orthodontist. The result is that today by measuring the width of one upper central incisor we may determine approximately the shape and size of the arch in which that tooth belongs, and may draw it on paper so accurately that we may work to that arch with confidence. If there is any slight variation in the sizes of the various teeth in the same mouth and we work up to the model, nature will make all proper correction in the way of diminution and adjustment to type without assistance, and at the same time without any injury to size or strength or the adaptation of the arches to each other."

It is not my intention to enter into detail at all regarding the various methods of correcting nasal or dental deformities. Methods of correction applying to nasal irregularities are familiar to every one present. Correction of dental deformities must, of necessity, be left to the orthodontist. I am satisfied if this brief paper shall call to your minds a method of relief for your little patients, who still breathe thru their mouths after all your careful ministrations.

I am indebted, in addition to credit already given, to Dr. Milton T. Watson, of Detroit, Mich., Dr. S. E. Dodson, of Grand Rapids, Mich., and Dr. Martin Dewey, of Kansas City, Mo., for many valuable suggestions from the standpoint of the orthodontist.

DISCUSSION.

M. A. BARNDT (Milwaukee): This is a field in which I have been doing more or less thinking for some time. Like many others, have operated upon children for tonsils and adenoids and other nasal obstructions, and did not obtain the results that I expected; after meeting with a few of these cases I began to look farther into the subject and found that in many cases where the palatine arch was very high with malocclusion of the teeth, I had to be very cautious as to my prognosis. I specially remember one case of a little child that I had operated upon with comparatively no benefit; the dentist with whom I am associated began to regulate the teeth, to separate the palatine arch, and when all was completed we had a splendid result. Thus in my opinion all cases should be looked over carefully and all points taken into consideration. For simple removal of the adenoids, tonsils or perhaps a shrinking of the turbinals in cases where the palatine arch is high and there are other dental deformities, we must be guarded in our prognosis, other-

wise we may be disappointed in our results. In cases of simple removal of the tonsils and adenoids or hypertrophied nasal tissue, where there is no malformation of the teeth, jaw or arches, we can obtain most excellent results, but if there are other obstructions we must certainly look farther, and the help from the orthodontist is certainly very gratifying.

The pressing of the tongue upon the palatine arch, the muscles of the cheek crowding the jaws together, the effort made by drawing air thru obstructed nostrils, are all factors in maintaining these deformities. Other factors will aid somewhat in correcting these deformities, but are not sufficient to overcome the difficulties and form a perfectly shaped head and face. In my opinion the methods of correcting these deformities should be left entirely with men of experience along this line. I am satisfied that when we do all that we can in our line of work and do not meet with results, our patients are more than grateful if we can offer them something that will gives them more relief by turning them over to the orthodontist.

MARTIN DEWEY, M. D., D. D. S. (Kansas City): It has long been known that some relation existed between those who treat conditions and operate above the floor of the nose and those who do the same below the floor of the nose. Rhinologists have recognized the importance and need of some one that could obtain results in certain cases after they had done all they could. It is a fact, as Dr. Myers stated, that the orthodontist was the first to call the attention of the medical world to the benefits which could be obtained by the proper treatment of this class of cases which have so long troubled rhinologists. You may not realize that in a large number of cases your final success is dependent on the work of the man who successfully treats teeth and dental arches. However, you can feel a sense of satisfaction by knowing that he too is dependent upon you in a large number of his cases. As I will show you, operations which are performed upon the teeth with a view of producing normal occlusion, the correction of dental deformities, play a large part in the proper development of the nasal cavities and thereby removing the existing nasal deformities in a large number of cases.

I will confine my remarks to mouth breathers and to that class of patients who are, or have at some time been, sufferers from adenoids. This does not include all the cases in which the rhinologist and orthodontist work hand in hand, but for lack of time I can not discuss all of them. And here I must warn you, there is a vast difference between the orthodontist and dentist; as much difference as there is between the rhinologist and general practitioner.

Experience has shown that there are different types of mouth breathers, but I must again confine myself to that type which we find have been the result of adenoids, or, more correctly, lymphoid tissue. Experience has shown that this class of patients early in life have possessed normal dental arches and nasal cavities, also, that if the nasal obstruction was removed early enough the deformities would not take

place. However, we as specialists hardly ever see these cases until enough harm has been done to call the parents' attention to the fact that the operative treatment is all that will give relief. If the nasal obstruction exists any length of time, mouth breathing being persisted in during that time, we find deformities of the dental arch always result; these in turn have an evil influence on the nasal cavities.

After seeing the same class of cases so many times, we have come to the conclusion that adenoids are responsible for that class of malocclusion which is characterized by protruding upper anterior teeth, narrow upper arch, receding mandible and teeth, short upper lip and abnormal lip functions. In addition to cases in which adenoids are present there are also cases without adenoids; this only proves that the adenoids have disappeared for some cause and that the malocclusion is the mark which they always leave if they have been present any length of time. Therefore, an early removal of the adenoids is important; do not allow them to atrophy, as I find some recommending, for before they atrophy we will have a great deformity developed in the arches.

It is in the class of cases referred to that the rhinologist and orthodontist must work hand in hand. As Dr. Myers has said, you have operated on cases and removed everything in sight yet the patient went on breathing thru the mouth, not from habit but from necessity; necessity, because the dental arches are so deformed that the patient *can not* close the lips without an effort which he will not make. Necessary, because the mouth breathing has not only deformed the dental arches but has exerted an influence on the nasal cavities.

It is a fact that you can not have any marked deformity of the dental arches without a deformity of the nasal cavities. As a result of this the "habit" cases breathe thru the mouth because they can not get the proper amount of air thru the nasal openings. It is also known that you cannot remove this nasal deficiency by operating on the nose by any operation known to rhinology. The only help that I know of comes from the orthodontist after you have removed the nasal obstructions.

Some of you will no doubt ask, "How does this lack of development of the nasal cavities take place and how is it influenced by treatment of the dental arches?"

In the beginning I will say that while the orthodontist seems to be operating on the teeth directly, he is also operating on all of the bones of the face. The influence of his work can not be estimated by what he does by way of improvement of the position of the teeth. When the lymphatic tissue has hypertrophied to such an extent as to obstruct the passage of air thru the nose, we find the mouth breathing takes place. As all of the muscles which depress the mandible also pull it backward, the mandible is *held back* to a certain extent; this continued abnormal muscular pull, day and night, soon has an evil effect on the development of the body of the mandible. This accounts in part for the receding chin which we find in these cases.

Also the position of the tongue when the mouth is open influences

the position of the lower teeth. Instead of occupying the entire oral cavity, we find it lying in the lower portion of the mouth and then not in its normal shape, but pulled down and back by the action of the hypoglossus; that is, the anterior end is pulled back so as to remove the pressure of the tongue from the anterior teeth. The position of the tongue in the normal breather has been spoken of by other men, and I will state briefly what it is and the influence it has on the growth of the arches and nasal cavities. In its normal position it fills the entire oral cavity. When the mouth is closed after speaking, we very soon swallow. In doing so a vacuum is formed and the tongue is forced against the roof of the mouth and against all of the teeth. The suction of the tongue against the roof of the mouth pulls the vault downward. There is also a lateral thrust of the tongue against the sides of the arches, which tends to stimulate their development in that direction. The continued action of the tongue as described in the course of weeks, months and years would amount to a great amount of force having been exerted. In mouth breathing we find all of this is absent and the lack of it accounts to a great extent for the high vault and narrow upper arch which we have spoken of.

I wish to state that I do not think the vault or roof of the mouth, or arch of the palate (call it what you will) has been forced up, as some have said, but it has failed to be forced down. As the mouth is held open in the beginning of mouth breathing, the teeth are apart. This invites a downward growth of the teeth and alveolar process which takes place. The vault does not grow down as rapidly as the process; therefore, in a short time it is high as compared to the teeth and process. In fact it is high as compared to the ethmoid bone; but do not get in the habit, as some have, of saying it has been forced upward. It is retarded in growth, caused by the lack of the suction of the tongue and the lack of nasal respiration. There may be other factors which exert an influence, but these are important and must be taken into consideration. With every normal act of respiration there is a force exerted in the nasal cavities which during the growing period of the child, is very necessary. It not only tends to expand the nasal cavity but also expands the sinuses as well. Therefore in mouth breathers we would expect the underdevelopment which we always find.

The effect of the muscular action on the mandible has been spoken of. We also find that muscular action plays an important part in the shaping of the upper arch. During normal breathing the orbicularis oris is active in closing the lips. When the lips are inactive, as they are in mouth breathing, no pressure is exerted on the anterior teeth. The upper anterior teeth are permitted to protrude because of the removed pressure. They are further aided in the protrusion by the patient being forced to moisten the anterior part of the palate either with the tongue or lower lip. Each act just described pushes on the upper anterior teeth, as a result of which we soon have a glaring deformity. After the teeth and arches have become malformed the patient cannot

close the lips without an effort, and mouth breathing will persist reregardless of what the rhinologist may do.

As a result of the chain of events which I have briefly called your attention to, we find the typical case of malocclusion and nasal deformities developed, the treatment of which we will now consider from the standpoint of both rhinologist and orthodontist.

The first step is the removal of adenoid tissue and other obstructions which were the beginning of the condition. Our next step is the changing of the position of the teeth and arches so as to establish normal occlusion, make it possible for the patient to close the lips, and stimulate the proper growth of the nasal cavities. You must remember that the maxilla and intermaxillary bones support the teeth of the upper arch. Also that they contribute to the formation of the walls and floor of the nasal cavity more than any other bones. You should now see the influence which their malformation exerts on the size of the nasal cavity. Take the typical case of narrow upper arch and high vault. By expanding the dental arch, we find the vault is pulled down. Take a visiting card and hold it between the thumb and finger in such a manner as to produce an arch. Release the end and you will see the arch come down. That is what takes place when the dental arch is expanded in the treatment of these cases.

The floor of the nose is pulled down to such an extent that deviation of the septum has been corrected. In fact we can expect such to be the result in 90 per cent. of deviated septums found in [young] mouth breathers of the type spoken of. I should say 100 per cent., for in all cases where the patient has been examined by the rhinologist before and after treatment the septum has been straightened. As the number so examined is not great we can not be too sure of the continued success, but everything points to as good results in the future as we have had in the past.

With the pulling down of the floor of the nose, straightening of the septum, we also have an increase in the lateral diameter of the nose. This greatly increases the nasal space, and after the arches have been so changed that the patient can close the lips and teeth everything is favorable for nasal respiration.

You now see how, by enlisting the aid of the orthodontist, you will be able to do things for your patient that you have heretofore considered impossible. In doing the most good for your patients you must recognize the necessity of the orthodontist as he has recognized his inability without your aid. If I have succeeded in impressing upon you the relation between rhinology and orthodontia, I feel greatly repaid.

H. S. WEAVER (Philadelphia): There is just one thing that I wish to call attention to, and that is the age of the patient; you will find that adenoids are not limited in their occurrence to children. Within the last year I operated upon a man for adenoids where the postnasal space was entirely filled with them. He never remembered being able to breathe thru his nose, and hence had probably had them all his life.

He was an unusually heavy set man, weighing about two hundred pounds. Owing to the age of the patient I thought the trouble could not be due to adenoids. I tried to get a view of the postnasal space with the rhinoscope but could not. I then introduced my finger and found as typical a case as I ever found in any child. At the operation I found the adenoids tough; the curette was useless, I could not do anything with it. I finally had to go in with adenoid forceps and literally tear them out piecemeal.

The dental arch was contracted, the teeth protruded and the nose was not well developed. His age was forty-nine. I do not remember ever seeing a case of that age reported. I had to do some work on the turbinated bodies. I obtained fair nasal respiration; he breathes thru the nose as long as he is awake but at night still uses his mouth.

E. W. BEEBE: Were the growths fibrous in character?

DR. WEAVER: They were fibrous and as tough as leather.

ISAAC C. SOULE (Kansas City): I had last year an interesting case that illustrates the influence of abnormal formation of the dental arch. The patient was seventeen years old with poor development of the nasal organs owing to partial occlusion of the postnasal space by adenoids. These were removed without any appreciable effect on the mouth breathing. I urged the parents to go to a dentist and have the teeth attended to, but could not influence them. Shortly after the girl was in an accident, being thrown out of a buggy while the horse was running away. The upper teeth were knocked out and the alveolar processes crushed. Then she had to be taken to a dentist, and as a result of the accident and the work done some of the narrowness of the dental arch was relieved and she has breathed better ever since.

C. GURNEE FELLOWS (Chicago): Somebody suggested that it was impossible to send a patient to an orthodontist in most parts of the country because there were not many of them; it was not possible to send a patient to an eye or ear specialist twenty years ago, except in the largest cities.

If we find that the orthodontists are a help to us, and we begin to make use of their services, it will not be long before there will be plenty of them, and we can avail ourselves of their help even in the smaller towns. I have sent cases to dentists many times, but now that I have learned something I never knew before I shall send them to the orthodontist for an opinion in regard to teeth and mouth deformities.

BURTON HASELTINE (Chicago): It is no doubt a fact that we have not fully enough recognized the bearing of mouth trouble upon certain cases of mouth breathing, but it would be a serious mistake to suppose that any large number of septum deformities can or could be cured in this way. As a rule the septum deformity is a late thing. It does not usually come to us until some time after the mouth breathing habit has been established. The widening of the dental arch might correct a slight curve perhaps, but the usual septal deflection is a much more complicated thing than simply a bending pure and simple of the septum

to one side; it is thickened and hypertrophied, much more like those callosities that occur around the ends of broken bones that are not properly approximated. Such a condition cannot be cured by any pulling down of the palatal roof or straightening of the dental arch. No doubt the orthodontist could prevent the deformity by his work in the mouth if he saw the case early in life, but by the time we generally see them, deflections of the septum require operative work in the nose and often extensive work, too.

DR. WEAVER: I should like to know what the doctor's experience has been in regard to the recurrence of jaw malformation after operation for its correction. I have seen cases where the deformity has returned within a year after the operation almost as bad as it was before.

DR. DEWEY: The removal of a malformation without the removal of its cause is not a cure. Remove the adenoids by all means, but they will come back in all probability unless you also remove that prior condition upon which they are based.

DR. MYERS: I am very glad this paper has brought out the discussion it has, and hope it may serve to call attention to an important but neglected subject. From what Dr. Haseltine has said I think he misunderstood Dr. Dewey. Dr. Dewey means that the case must be taken in its early stages in order to correct septal deflections. He did not mean that orthodontia would correct deformities depending upon thick calluses. We find often in cases of apparent deflected septum that there is no depression on what should be the concave side, but instead simply a thickening of the septum in the occluded side. Of course no one would expect to correct a deformity of that kind simply by work in the mouth. But this work is invaluable in its place. Dr. Weaver's case was an interesting one; the adenoids had been there since a very early age and had never cured themselves nor been removed. Adenoids do not always disappear with advancing years. If in that case there had been an operation early for their removal and nothing else done they would have recurred. With dental deformities uncorrected, our adenoid operations are very often failures, and we have noticed again and again the recurrence of adenoid tissue and the regrowth of the tonsils. Another point that we should notice is the heedless and promiscuous extraction of teeth, much irreparable deformity resulting thereform. A whole lot might be said upon that subject, and we should put forth every effort to stop the practice.

COUGH, ITS RELATION TO LYMPHOID HYPERTROPHY IN THE PHARYNX.

JOHN B. GARRISON, M. D.,

New York.

IN choosing a subject for presentation to the society I have taken one which may appear to be extremely commonplace and not of sufficient importance to introduce at a scientific meeting such as is assembled here today. It is commonplace, yet what is there in the whole list of diseases which we as physicians are called upon to relieve and cure, that is more universal and which is more likely to cause anxiety to both physician and patient than cough, and if I can present anything that will in the least help to solve some of the difficulties which seem to stand in the way of speedy relief of certain coughs I shall be well repaid for the trouble and you may even pardon the title.

It has been my fortune to meet a great many cases of cough where an examination of the chest failed to disclose any lesion, yet where the cough was persistent and the general condition of the patient was such as to be the cause for much more alarm and anxiety to the family. An ordinary examination of the throat, such as the family physician usually makes, shows only what may generally be termed a trifling irritation, yet the cough continues, and if it is not improved to an appreciable degree, there is a likelihood of a change of doctor in the near future, and that is not pleasant. I know how it feels.

In all cases where cough is present I should advise a thoro examination of the pharynx and larynx as a matter of routine, for it frequently is the case that some condition is present which, if discovered, will assist materially in the relief and permanent cure of coughs that defy all ordinary modes of treatment, and all physicians ought to be prepared to make such examinations and to know when they see a throat that is normal, to say the least, and no student should be graduated in medicine until he is able to use the throat mirrors as a means of diagnosis.

We all know that there is a chain of lymphoid tissue commencing

with the faucial tonsils on one side, upward to the tonsil of Luschka, down to the faucial tonsil on the opposite side, then downward to the glossoepiglottic fossæ, where are located the lingual tonsils and upward to the starting point, thus completing the chain called the "ring of Waldmeyer." All of these aggregations of lymphoid tissue are liable to hyperplasia, and when this takes place it may cause varying symptoms to appear. There is also another mass of lymphoid tissue lying just back of the posterior pillar and often completely hidden by it, which extends in some cases from the heel of the lowest lobe of the faucial tonsil up to and around the edge of the soft palate, then uniting, some say, with the lymphoid tissue near the mouth of the Eustachian tube. These are called the lateral bands; they are frequently hyperplastic and the symptoms that are by them sometimes produced are quite distressing.

The faucial tonsils are easily seen and are almost always noticed by the attending physician, and while they are sometimes, when greatly enlarged, the cause of cough, this is not likely to be overlooked when it is really the cause.

The adenoids are likely to produce an abnormal amount of secretion and secondarily be the cause of a cough, but when this is the case it is more likely to be attended with hoarseness and is seen more frequently in children than in adults.

I do not claim anything original in citing hyperplasia of the lingual tonsils as being the exciting cause of distressing and long continued cough, but I have been astonished at the frequency with which this condition has been overlooked by those who are well aware of the irritation that enlargement of the lingual tonsils may produce. When the tonsils are sufficiently enlarged to come in contact with the border of the epiglottis there seems to be no reason to wonder why they cause cough, but when they have not, apparently, become large enough to cause such an irritation, I have seen the removal of small elevations attended by the subsidence of the cough at once.

The little glands are said to number over sixty—in taking an average—and are more or less isolated as to their grouping. The more they are bunched as it were the more likely they are to become hyperplastic later on.

Normally there should be a perfectly clear space between the tongue and the epiglottis. When hypertrophied the result differs greatly in individuals and the temperament undoubtedly has a great deal to do

with the symptoms produced. In some cases the tip of the epiglottis will be found imbedded in the mass of hyperplastic tissue; in others, where the symptoms are equally as distressing, there may be only one small enlargement; but the general condition of the patient enters very largely into the case and should always be taken into account.

Any age may be affected, but the majority of the cases are found to be from twenty-five to forty years of age. The sex most affected has usually been said to be the female, but my experience has found it to be about equally divided; the females will be the most likely to present themselves for examination on account of some such symptom as "a foreign body in the throat," but if a routine examination is made of all the cases that come before you, I believe that there will be little difference in the numbers found in the male and female.

When the tonsils have become hyperplastic there will be occasion when acute aggravations will be noted; and you will find that indigestion, the use of irritating food or drink and diseases of the female generative organs will have a direct influence in provoking these aggravations.

During the menstrual period the lingual tonsil is very apt to become enlarged, to return to its accustomed size as soon as that function has disappeared. In dysmenorrhœa these aggravations are peculiarly liable to be seen. In many cases the veins surrounding the tonsils will be more or less varicosed, and in some cases there will be quite severe hæmorrhages; sometimes, indeed, the flow of blood from this locality will take the place of the catamenia.

We have dwelt on the causes somewhat and have by no means exhausted the subject, but as this paper is to consider mainly the cough produced by the hyperplasia, I will not give more time to the causes but proceed to conclude.

Cough from enlargement of the lingual tonsils may be found at almost any age. There is no doubt that children frequently have slight enlargements of those lymphoid tissues, and as a result, the sharp metallic, ineffectual, cough which we hear so often. When the patient has the glandular enlargement in this locality accompanied by the varix, and there is also anemia, anorexia, insomnia, and occasional hæmorrhages, there is no wonder that the family should be anxious or that suggestions of tuberculosis should be offered by interested friends. There is a slight cough, always accompanied by a hemming that is annoying, perhaps more to the listeners than to the patient, which has its

origin right here and which can be cured at once by proper treatment of the enlarged glands.

My chief object in writing this paper was to urge the constant and routine examination of patients who have coughs which do not get well rapidly, to know whether there may not be some pathological condition in the glossoepiglottic fossæ, and not to say so much about the treatment, for you all know what to do as well as I do.

I want to say, however, that there are a great many cases that will respond beautifully to your remedies if you forget that the patient has a throat for the time, and prescribe for the whole patient. It may be lycopodium, or pulsatilla, or cocculus, or hamamelis, or some other drug, but it will repay close study at all events. In adults, however, where the hypertrophies have become so large and so firm that the irritation persists and the cough is severe, I do not find anything to equal the radical cure by instrumental interference.

The guillotine is effectual and produces results when the enlargement is present, in all cases; but I believe that we as homœopathists should use our remedies at first, if possible. Where there is a varix accompanying the lingual hypertrophy, it is well to use a broad, flat cautery electrode to destroy it.

I could recite many cases but will not take up the time, as it is not necessary.

115 East 71st Street.

TUBERCULOSIS AN UNRECOGNIZED CAUSE OF SCLERITIS, WITH REPORT OF A CASE.

ALBERT E. CROSS, M. D.,

Worcester, Mass.

THERE are few diseases of the eye about whose beginning less is known than that of scleritis and sclerosing keratitis. Almost every case presents to us questions of great obscurity, and it is with the object of discussing its relation to tuberculosis that I am reporting this case. The clinical pictures of these cases are very similar: practically all cases begin with a diffuse or circumscribed patch of a bluish red injection in the ciliary region, with more or less sharply defined episcleral elevations. In the tubercular cases hard whitish nodules about the size of a pin head develop in the inflamed tissue directly under the conjunctiva.

If the scleritis is of the deep type there will be a greater or less involvement of the deeper structures of the eye.

The disease occurs chiefly in adults, and more often in women than men, running usually a chronic course.

It may attack one or both eyes and relapsing attacks may occur over a period of years, with the final result under previous methods of treatment of dense corneal opacities, occlusion of the pupil, opacities of the lens and vitreous, ectasiæ of the sclera and partial or complete loss of sight.

The pathology of this condition is imperfectly understood; infiltrating cells are found either in the superficial or deep layers by which the scleral fibers are crowded and partly destroyed. The vessels are dilated and extravasations of blood are found; the choroid is usually found to be infiltrated and edematous. Stock maintains that the scleritis always starts from a focus in the uveal tract, altho the uveitis may not be manifest until the case is well advanced; this would explain the location of the nodules of scleritis near the anterior perforating arteries which offer a direct means for the transmission of the process.

In many cases hard whitish nodules are found about the size of a pin head or smaller under the conjunctiva, and, as reported by Verhoeff, have as their chief peculiarity a tendency to appear and disappear within a week.

The histological examinations which he made in four cases showed that the essential lesion was a proliferation of epithelioid cells among which an occasional giant cell occurred surrounded by an infiltration of lymphoid and plasma cells. Caseation was entirely absent. In sections especially stained for the purpose tubercle bacilli were not found, but this is often impossible even in active lesions.

With the exception of caseation these nodules had the structure of small tubercles, and he regards the appearance of these small nodules in a case of scleritis as alone sufficient evidence of the tubercular character of the process.

One cannot but be impressed with the difficulties he has had to encounter in the treatment of this disease, that while we are told it is due to rheumatism, gout, syphilis, etc., it is the rule in these cases to get no history of such conditions or any general dyscrasia that seems to throw any light on the subject.

It cannot be said that we have any rational treatment for this disease, and while one swallow does not make a summer, each new confirmation of the value of tuberculin in this disease brings us nearer to the time when we will no longer dread to meet this condition.

Tubercular diseases of various ocular structures have been reported for years, but that scleritis was in itself a tubercular process and amenable to the tuberculin treatment, has not been recognized.

In a careful study of the literature of this subject I have been able to collect only twenty-seven cases where tuberculin reactions have been obtained, and in almost every case there was marked improvement following its use.

Robert Koch announced the discovery of tuberculin in 1889, and nearly everyone regarded this serum as a positive cure for tuberculosis, but on account of the serious consequences following its early use it was entirely discarded. During the past two years under more intelligent clinical trial, it has again come into general use. Koch did not consider his old tuberculin as an immunizing agent, but thought that the reactions which it produced were due to a necrotic process which ended in a discharge of the diseased tissue and healing of the lesion.

His original tuberculin is made by evaporating liquid culture of the living bacilli to one-tenth its original volume and filtering off the bacilli thru a porcelain filter. This tuberculin, which is a glycerin extract, is what is used on both man and animals for the tuberculin test and what was used therapeutically in the following case. His more recent tuber-

culins, the T. R. and T. E., are suspensions of the crushed tubercle bacilli in glycerin and water.

Other tuberculins have been used, as Deny's B. F., Spengler's Bovine B. F., Behring's T. C., and many others, all of which are vaccines, and all are made from either the body substance of the germ or the culture in which it is grown. They all produce in sufficient dose the well recognized reactions in tubercular subjects.

In 1904 Hippel reported his experience of ten years with tuberculin. He says that T. R., if properly used, will cure an eye which is even seriously affected with tuberculosis, and enucleation should not be done until the tuberculin had been tried, especially because it had no detrimental effect on the condition of the patient.

Two methods are in use to guide us in regard to the use of tuberculin.

1. The laboratory method was introduced by Sir A. Wright as a result of his discovery of the opsonins, upon this he relies solely both as a guide to dosage and the intervals between treatments. On account of the technical difficulties involved and the laboratory apparatus necessary in taking the opsonic index, it places this method beyond the scope of the ophthalmologist alone and requires the co-operation of a pathologist skilled in this particular technic.

2. The clinical method has developed from the experience of those using tuberculin; the dosage, intervals between doses, and length of treatment are governed entirely by the patient's condition and symptoms.

The method used in the treatment of this case is that used at the Massachusetts State Sanitarium at Rutland, Mass., and I am indebted to Dr. George Lapham, resident physician, for the following formula of which one drop represents one milligram of old tuberculin:

℞. 5 minims of ac. carbolic, 25 per cent.; 5 minims of Koch's old tuberculin; distilled water, ʒiij.

The diagnostic dose of this solution is from two to ten milligrams well diluted with water.

Control temperatures are taken for one week prior to making the diagnostic dose. The diagnostic dose begins with two milligrams diluted in ʒij of water. Beginning two hours after the initial dose, the pulse and temperature should be taken every two hours for forty-eight hours. If no reaction results five mgm. may be given, then seven and then ten mgm. If there is no reaction with this amount the patient is

in all probability not tubercular. For therapeutic purposes begin with a very small dose, say 1/100,000 mgm., then 1/10,000, 1/5,000, 1/2,000, 1/1,000, 1/500, 1/200, 1/100, 1/50, 1/20, 1/10, 1/5, 1/2 and one mgm.; from this point up the increase is by one mgm. only.

Previous to a diagnostic or therapeutic initial dose the temperature and pulse should be taken every two hours for twenty-four hours, to determine the normal average of the patient.

In every case where tuberculin is used, whether for diagnostic or continuous therapeutic use, any reaction that may have been obtained, such as nausea, malaise or rise in temperature, should have entirely subsided for at least three days before another dose is given.

Fresh solutions should always be made for every treatment.

The intervals between injections, provided no intolerance is manifest, may be from three to seven days. Local reaction at the site of the lesion is an excellent guide to dosage, as our aim should be to keep the dosage such as not to bring about a local reaction. Reaction at the point of injection manifests itself by a more or less extensive circumscribed area of redness, edema and pain; if slight it needs no attention, if severe it indicates beginning intolerance, and care should be used in increasing the dosage.

Notwithstanding the most careful precautions, abscesses have occurred at the site of injection, which upon bacteriological examinations have been found to be sterile.

The following case has been under my observation for two years, and I believe it is an interesting example of the failure of previous methods of treatment to control the disease. While under treatment with tuberculin no other remedies were used, with the exception of a weak solution of atropin during the early part of the treatment on account of the sluggish character of the iris.

Miss R., single, aged twenty-two years, stenographer, apparently well nourished and in perfect health, family history excellent.

The patient is the second of four children, all living, and aside from the mild affections of childhood has never had any serious illness. Careful questioning revealed the fact of a scrofulous condition during childhood with recurrent attacks of phlyctenular conjunctivitis, which persisted for months, accompanied by enlarged cervical glands.

Menstruation appeared at about 14 years of age, and has always been more or less irregular and scanty or profuse without apparent cause. She shows no evidence of any functional disease.

She came to me June 5, 1906, for relief of pain and photophobia of right eye. On examination I found the episcleral vessels injected over the ciliary region on nasal side of the cornea, iris sluggish and dull in color, with a slight elevation close to the corneoscleral junction. On account of the previous history of phlyctenular conjunctivitis it was impossible to make a diagnosis between that, iritis and episcleritis. As there were no special symptoms aside from the pain and photophobia, on account of the sluggish action of the pupil I gave her locally ℞. Atropin, gr. i; aqua, ʒiv, 3 t. d., and ordered to report the next day.

Not until the third day was a positive diagnosis of episcleritis made, which was later changed to deep scleritis on account of the involvement of the deeper structures of the eye. At this time ℞. Dionin, gr. v; atropin sulph., gr. ½; aqua, ʒv; one drop four times a day locally was prescribed, with mercurius 3x 3 t. d., and hot compresses for relief of pain. This was continued one week without any apparent improvement, when aurum 3x 4 t. d. was given and drops continued. At the end of the second week there was marked improvement, which continued until July 2d, when the case was discharged and patient went to Maine for a vacation at the shore.

On July 5th with the appearance of the menstrual period another nodule appeared somewhat larger than the last and directly under it. Pain and lacrimation were more severe than during the last attack, and on returning to my office July 7th there was a slight haziness at the margin of the cornea nearest the nodule. Investigation of the menstrual function revealed its irregularity, so I referred her to her family physician, who reported a slight retroversion of the uterus with marked sensitiveness over the ovarian region. Local treatment gave no relief to the eye symptoms, and with exception of the use of thuja θ 1m. 4 t. d., no change in treatment was made.

Gradually this attack cleared up but again on the appearance of the next menstrual period another nodule developed in the ciliary region on the temporal side of the cornea with again evidences of a sclerosing keratitis, and at this time slight opacities could be seen in the vitreous. At this time a urinalysis of the twenty-four hours' urine was made, which was found normal with the exception of the elimination of urea, which was only 12 grammes in twenty-four hours.

A careful investigation of the diet and hygiene of the house was made, which was found to be above criticism, and the only change made was in the amount of proteids taken. Sodium phosphate in fifteen

grain doses was given twice a day, and at the end of three weeks the urea elimination was normal. Blood examination was also negative; a slight leucocytosis was found but a differential count was not made.

Again there was a clearing up of all symptoms only to have another relapse at the next menstrual period in September, and while the nodule was not as large the accompanying symptoms were more severe.

On account of the possibility of a rheumatic diathesis (of which I could find no indications) I gave sodium salicylate 5 grs. 3 t. d. This was continued for three weeks without any apparent change from the previous condition, and again there was a relapse with the appearance of the next menstrual period; this nodule appeared under the cornea and with it a sclerosing keratitis extending from 2 to 3 mm. into the corneal tissue.

With the hope of controlling the keratitis I began making subconjunctival injections of normal salt solution, starting with five drops and gradually increasing to twenty-seven drops. Injections were made every three or four days, with few exceptions, until December. Under this treatment there was marked improvement, the area of sclerosis was much reduced, and for the first time there was no relapse with the appearance of the next menstrual period.

In December the case was discharged and there was no further trouble until March, when another nodule appeared at the upper temporal portion of the sclera; this attack developed a sclerosing keratitis extending almost to the center of the cornea and somewhat club shaped, the narrow portion at the margin of the cornea. The club shaped end consisted of deep infiltration of the cornea which showed three punctate areas of greater density; this sclerosing area showed no tendency to become vascularized.

Vision was reduced with refractive correction from 1. to 0.3, Again I began the use of subconjunctival injections, and on account of the alterative effect of KI as well as to exclude any specific condition, I gave 5 drops of a saturated solution in water twenty minutes before meals, gradually increasing to 15 drops, with no appreciable result.

On account of the extensive sclerosing keratitis I arranged for a consultation with Dr. Wells, who suggested the possibility of its being tubercular, and advised making the tuberculin test, if the patient's consent could be obtained. On receiving the consent of my patient, beginning May 1, 1907, her temperature and pulse were taken every three hours for one week, with no appreciable changes from the normal. Physical examination proved negative.

On May 8th a diagnostic test with 2 mgm. of tuberculin was made and temperature and pulse recorded every two hours for forty-eight hours. This test proved negative, no local or general reaction obtained.

On May 15th the test was repeated with a 5 mgm. dose; ten hours later there was a pronounced general reaction with a gradual rise in temperature to 101.6° at 2 p. m the following day, accompanied with nausea, headache and general malaise. The local symptoms were exaggerated and some increase in the pericorneal injection.

May 17. Pulse and temperature normal.

On May 21st, after all symptoms of the reaction had subsided, the therapeutic treatment began with a dose of 1/100,000 mgm., and gradually increased, as previously explained, until 1 mgm. was reached; injections were made at intervals of four days to a week until August 28th. During this treatment the patient was advised to live out of doors with moderate exercise, and to take as much nourishment as possible. She also kept a record of her temperature and weight.

From the beginning of the use of tuberculin there was immediate improvement; no new nodules appeared and the sclerosed areas in the cornea, except that in the central portion, became perfectly clear and vision improved from 0.3 to 0.8 +.

An interesting phase of this clearing of the cornea was a change in the astigmia present under atropin since the use of tuberculin.

April, 1907, she was wearing O. D. + 1. ⌒ — 2.75 c. ax. 5°, V. = 0.3. From this time the following changes were made, each time with a cycloplegic:

June, 1907, + 0.75 ⌒ — 2. c. ax. 155°, V. = 0.6.

August, 1907, + 0.50 ⌒ — 2. c. ax. 155°, V. = 0.6 +.

August 28th, the case was discharged, but on October 9th Dr. Wells again saw the case and advised the continuance of the tuberculin to see if it was possible to entirely clear up the corneal infiltration. Since October 13th injections of 0.5 mgm. have been made, with few exceptions, once a week, and while the central punctate areas do not seem to change there has been a continued improvement in vision. Present correction is as follows:

+ 0.5 s. ⌒ — 1. c. ax. 155°. V = 0.9.

Up to date there has been no recurrence of the scleritis, the general health has improved and weight has increased from 112 to 127 pounds.

Here, it seems to me, we have a well marked case of sclerosis of

tubercular origin, reacting to tuberculin and local improvement steadily progressing to complete recovery since its use. Its not yielding in any way to a varied therapy covering a long period gives a clear clinical demonstration of the fact that tuberculin has a distinct therapeutic value in this condition.

DISCUSSION.

G. DE WAYNE HALLETT (New York): In the realm of ophthalmology there has appeared more and more evidence in the last several years favoring tuberculosis as the etiological factor in nodular choroiditis, scleritis, sclerosing keratitis, iritis, etc.

There have been grave difficulties in the way of diagnosis, for, as Dr. L. S. Ziegler (1) says: "Keratitis tuberculosa so closely resembles interstitial keratitis in clinical manifestations that the differential diagnosis must be made by other than the macroscopic appearances of the eye. The diagnosis may be made by any of the following four methods: (a) by bacteriological examination, which is generally impossible, (b) by inoculation tests, also often impossible, (c) by signs of systemic involvement, often not present, and (d) by the reaction to tuberculin."

It is on the latter that the medical world now focuses its attention.

Writing on this subject in 1905, Dr. Chas. S. Bull (2) said that only two cases of tuberculosis of the sclera had so far been reported.

Of tuberculin injections he states that they are not curative, but Drs. Gamble and Brown (3) had published a prior article reporting a case of secondary tuberculous iritis cured by this method.

Prof. Calderado (4) reports three cases of tuberculosis of the sclera in 1906, and Drs. Hancock and Mayou (5) in 1907 reported nine cases of ocular tuberculosis treated with injections of tuberculin under opsonic control with results considered better than with other modes of treatment.

The most extensive investigations with tuberculin appear to have been made by Dr. W. Stock (6) of Freiburg, who gives the results of five years' experimentation on forty-five animals, introducing tuberculous material thru the blood channels, and making frequent observations of the eventualities in various parts of the eye.

Tuberculous nodules developed in the choroid, sclera, iris, cornea, ciliary body, conjunctiva and lids; the choroid near its equator and the sclera being points of preference for the tubercle bacilli.

Reinfection of other animals by inoculations with bits of iris tissue and the presence of bacilli proved the nodules not due to foreign bodies nor to the action of dead bacilli.

The inoculated eye did not always develop tuberculosis; altho the bacilli were present in the material used, they were evidently too few to overcome the resistance of the tissues. The author states therefore that a negative inoculation does not prove that there was not tuber-

culosis in the first eye, and he suggests that the eye of a guinea pig is most susceptible to inoculation with tissue from the human eye.

In regard to the choroid and sclera he says, in part: crops of tubercles appeared in the choroid, most of them disappearing in from eight to fourteen days leaving no trace, in others an atrophic spot remained with some pigmentation, and in others the exudation lasted longer; some very anterior showed a protrusion in the sclera, with an edematous and infiltrated elevation of the conjunctiva. Some advanced with a gelatinous scleritis to the cornea and ceased there; others perforated, and in two cases sclerotizing keratitis developed slowly with nodules in the cornea, the process lasting some six months.

Cases were noted where the scleral protrusion was the first sign of intraocular tuberculosis, without vitreous opacities or visible choroidal changes.

For the purpose of showing that the use of tuberculin is still held to be not entirely free from deleterious consequences I will present an abstract from an article written by Dr. Arnold Knapp (7) the first of the present year. He reports a case of a child with a scrofulous superficial keratitis in one eye, into whose sound eye a drop of a one per cent. tuberculin solution (N. Y. B. of H. Laboratories) was instilled. Pain, redness, photophobia, catarrhal secretions, and a rise of temperature to 100.4° F. promptly followed. Ten days later a corneal infiltration appeared with new blood vessels, and six weeks later (date of report) it had invaded the cornea 3 mm. with all the appearances of an interstitial keratitis.

That tubercular iritis is amenable to the internal remedy was held by Drs. J. B. Gregg Custis and W. R. King (8), members of this society, who reported such a case in detail, as cured with baryta iodide, two years ago.

The essayist's paper is certainly very interesting, and not the least feature of it are the several relapses at the menstrual period.

The various treatments must have taxed the physician's resources and the patient's patience.

The progress of his case and the changes in refraction which were observed recall to my mind two cases which were quite similar except for the tuberculin treatment, and in which a useful vision was retained, the eyes quiescent now for some years, and no systemic involvement followed.

From the steady progress of the case it would seem that the writer was justified in the final diagnosis and the therapeutic value of the tuberculin treatment.

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C. JOSEPH SWAN (Chicago): Eight years ago I had a case in a student in our college with a keratitis of this description. It had been in the hands of other oculists before my treatment, and it was in the hands of others after my treatment. I as well as the others were unable to give her any help. As far as I can remember she had atropin locally, and large doses of salicylate and large doses of potassium iodide internally. Two years later she died of pulmonary tuberculosis. Since the discovery of the fact that these cases may be tubercular I have been hoping to have an opportunity to make a trial of the tubercular treatment.

I know of two cases successfully treated with tuberculin in the Illinois Charitable Eye and Ear Infirmary.

J. A. CAMPBELL (St. Louis): The extreme point of interest to me is that there were tubercular manifestations in the eye and nowhere else. Within the last three months some cases of tubercular eye trouble have occurred in the Children's Hospital in St. Louis, but there were always some other manifestations of the disease present. There were symptoms of tubercular meningitis in some of them.

Calmette's test gave affirmative result in two cases and negative in one. The local manifestation in the eye without general involvement of the system is very remarkable, because it is the general experience that tuberculosis is very seldom considered a local disease.

EDGAR J. GEORGE (Chicago): I had a similar case to that described by Dr. Cross but did not diagnose it as a case of tuberculosis. The tuberculosis test was not used by me because of the serious results that have been known to follow. My diagnosis as to the etiology was struma and not tuberculosis. The patient was a young woman. She had scleratitis with corneal involvement. I do not consider spots of this character on the cornea as tubercular but as an infiltration. When the sclera is affected by an inflammation the adjacent cornea takes on a similar condition, and an infiltration is the result. Under the indicated homœopathic remedy, which was sulphur, my patient got well. She has remained well for six or seven years. I happened to see her a few days ago; she passed thru Chicago and appeared to be a well woman in every respect. The cure was certainly the result of the indicated remedy. I used sulphur in the thirtieth potency.

In regard to the change in the astigmia attributed to the tuberculin, I do not think that it can be attributed to it but to the process of infiltration. Whenever we have a corneal infiltration the process naturally brings about a change in the corneal surface by producing a relaxation or contraction of the tissue. After each attack in the case I

spoke of, which recurred several times, I would have to change her glasses; the cylinders would vary as well as the axis. Hence I do not think that the tuberculin can be given the credit for the change in the astigma.

DR. CROSS: Dr. Hallett has evidently misunderstood my paper. I purposely made no reference to the use of tuberculin locally, either for diagnostic purposes, as the ophthalmo reaction of Calmette, or therapeutically, believing that both are fraught with danger if used in suspected tubercular cases. I would call your attention in the case which Dr. Hallett has cited to show the bad effects of tuberculin, to the fact that in this case the tuberculin was used locally for obtaining the ophthalmo reaction. If the tuberculin is used internally by injection and any aggravations that may occur are kept under observation, there will be no bad results.

In regard to other manifestations of tuberculosis in these cases only a very small proportion of Dr. Verhoef's thirteen cases showed any other tubercular lesion—with the possible exception of scrofula in childhood.

As to the diagnosis of struma which Dr. George made in his case, I am compelled to admit that I know no such diagnosis. I believe we should be more scientific in the classification of diseased conditions.

As to calling the corneal complications a sclerosing keratitis or sclerotizing keratitis, I used the classification common to all leaders in ophthalmology today.

Now as to the refraction, this case has been under my observation for five years, and up to the onset of the scleratitis there was practically no change in the refractive error. I do not intend to give the impression that the change in the astigmia was due to the tuberculin, but that it was simply an interesting feature in the clearing up of the scleratitis.

DR. MILLER (Blackwell, Okla.): Are we to understand that the tuberculin was given internally by injection and not in the eye?

DR. CROSS: It was not used in the eye. All the injections—forty-four in number—were given in the upper arm, alternately right and left.

DAVID W. WELLS (Boston): How recently did you see the case?

DR. CROSS: I saw the case last Friday and she was perfectly well.

SOME OVERLOOKED CONGENITAL LENS DEFECTS—CASES.

JAMES A. CAMPBELL, M. D.,

St. Louis, Mo.

THERE is no better exemplification of the rigid exactness and strict uniformity of nature's physical laws than the development of the human eye, unfolding from a vesicle spot until it is expanded and metamorphosed into a complicated and perfected organ of vision.

While the whole process seems indeed miraculous, the transition of the lens from the secondary optic vesicle, where the embryonic blood vessels form, develop and then by gradual absorption and disappearance of these formative vessels and primary tissues, at last the clear transparent lens stands out a perfected camera of beauty and utility; this evolution, I say, must be accepted as a bewildering proof of the higher laws which govern the process, and finally the higher power which makes such laws possible.

Varying recognized forms of abnormality occur in a phenomenally small percentage of eyes. The coarser or more complete types are readily recognized, as in congenital cataract, either complete or the anterior and posterior polar, the lamellar or nuclear forms. Again, dotted opaque spots may be present; or careful examination bring to light small pearl dots, opaque or slightly translucent.

From personal observation in a number of cases, I feel assured that certain small and inconspicuous congenital lens defects may exist without the knowledge of the person so afflicted. These spots permit fairly good vision, but such cases are conscious that their eyes have always been, as they term it, weak.

This condition remains about the same for years and little attention is given it by the patient; in fact, often the slight defect is in no way recognized by the patient, and no examination of the eyes has been made, save perhaps a futile effort to find glasses to improve distant vision, until reaching the presbyopic age the patient, probably for the first time, comes to the oculist for assistance. It is then that the true state of affairs becomes evident, and it is in such cases, coming under

our care for the first time, that misleading mistakes have been made; for the time of life, the evident lens involvement and diminishing vision (presbyopic) together make a group of symptoms which might readily be mistaken for the commencement of progressive cataract and thus an erroneous prognosis be given, full of disquieting and disappointing suggestion of gradual and early loss of vision.

I present three cases to illustrate the above:

Case 1. In 1881, Miss A., age 42, came to me, saying that while she saw fairly well, her sight had never been entirely satisfactory, and she had never been able to get any glass to help her. Her vision was, R., $^{15}/_{40}$; with — .60 s. ⌒ — 1.87 c. axis 180° = $^{15}/_{20}$. L. + 0.75 s. ⌒ — 2. c. axis 180° = $^{15}/_{20}$. The ophthalmoscope showed a small central lenticular cloudiness, identical and symmetrical in both eyes. This condition was explained to her and glasses were prescribed, as above given.

A few years after that, her vision for reading growing worse, on advice of a friend she went to another oculist, who after a careful examination told her that she had cataract in both eyes and would lose her sight within two years. Alarmed, she returned to me. I examined her eyes and found them in about the same condition as they were at my first examination, four or five years before; therefore I felt justified in reaffirming my former view of the case, that is that her trouble was a congenital condition and therefore would not, in all probability, develop with any degree of rapidity.

I examined this case over twenty years after I first saw her, and save a natural presbyopic development the eyes are about the same as they were in the beginning.

Case 2. Some years ago, a lady, age 45, came to me much depressed with the following history. Her vision had never been good for distance, but could read ordinary print, when held quite close. Within the past few months she could not see to read as well as before. She went to a well known and capable oculist of our city, who informed her that she had cataract in both eyes and that it was only a matter of a short time before she would be blind. He instructed her to return every few weeks for farther examination.

This she did for a few months, but not finding her sight growing worse neglected to return at a stated time and, being reprimanded rather severely for her negligence, was offended and hence came to me

for an opinion. Her vision was R., $^{7}/_{200}$. L., $^{7}/_{200}$. J. 1 at 6 inches. Right eye, with — 8. s. ⊂ — 0.75 c. axis 35° = $^{15}/_{20}$ +. Left eye with — 9. s. ⊂ — 0.87 c. axis 155° = $^{15}/_{30}$ +; with — 4. s. ⊂ — 0.75 c. axis 35°, and left eye — 4. s. ⊂ — 0.75 axis 155°, = J. 1 at 10 inches. The ophthalmoscope showed a small cloudy anterior capsular spot on each lens, identical in location, size and shape. For this reason, together with her history of defective vision from childhood, I gave it as my opinion that her defective vision was congenital, and that rapid loss of sight was not liable to occur.

She was given the above correcting glasses and sent on her way rejoicing.

I watched this case for several years and no change for the worse was evident.

Case 3. Over twenty years ago, a lady, 48 years old, consulted me. Her vision for distance had never been perfect; she had been wearing reading glasses for three years. Examination showed: V. R., $^{15}/_{30}$ With + 1. s. $^{15}/_{20}$, with + 2, 25 s. she read J. 1 at 10″ + 16″. Ophthalmoscope showed a little cloudy spot on the anterior central surface of each lens, identical and symmetrical as to location. For this reason, after a series of examinations, I gave it as my opinion that it was a congenital defect and as such would not be apt to grow worse for many years to come. She was directed to return every few months for further observation, which she did for several years. The result confirmed my view of the case, which was farther verified as her presbyopic correction was changed every two or three years. But within the last two years there has been a slow enlargement of the lens spots and diminution of distant vision. And while formerly a + 1. s. glass gave her V. = $^{15}/_{20}$, this hyperopia gradually decreased until now she requires a — 2. s. for best vision, showing the gradual swelling of the lens tissue which is often seen in the first stages of progressive lens involvement. The loss of vision has been very slow, but no doubt it will end in a fully developed cataract in due time; not an uncommon thing in a person over 60 years old. It must be remembered, however, that for the 20 years I watched over this case the lenticular defect was entirely nonprogressive, so that the final cataract is not *because* of the original trouble but in *spite* of it.

I am well aware that there is nothing especially new in the above facts, as stated; I am merely calling attention to certain conditions in

which unfavorable and alarming prognosis has been given by competent men which was not justified by the situation presented, and hoping by this warning I may help bring to mind the possibility of the existence of these anomalies, which are really less serious than at first sight they appear to be.

In a discussion before the Section on Ophthalmology of the College of Physicians and Surgeons, of Philadelphia, October 15, 1907 (*Annals of Ophthalmology,* Vol. XVI, 14. Page 681), Dr. Zentmeyer called attention to the frequency of opacities of the posterior capsule of the lens. He found them present in 5 per cent. of all patients examined. He considered them vestiges of the hyaloid artery. Dr. Mittendorf found them in 1 per cent of all cases he examined.

Mermod-Jaccard Building.

DISCUSSION.

J. M. PATTERSON (Kansas City, Mo.): Dr. Campbell's paper is another reminder of the fact that a careful diagnosis and cautious prognosis are absolutely essential to the maintenance of a reputation for skill as a practitioner of the healing art. Jumping at conclusions is so easy, so dangerous and so common that the wonder is more of us are not more frequently "bumped" than we are. In the present day, when even the opticians are fairly competent to detect an opacity in the media of the eye, such errors as the essayist has pointed out are not as likely to be made.

In the past four years I have had two cases of congenital opacity of the lens referred to me by opticians. One case a girl of six years and the other a boy of ten years of age. Both evidently cases of congenital anterior polar cataract. I say congenital, because there was no history or evidence in either case of an inflammation of the cornea or even of the conjunctiva. The vision in these cases was much improved by use of minus cylindrical lenses.

An anterior polar cataract will not so seriously interfere with vision as posterior polar cataract. In fact, one of the five cases that I have seen had such good vision in each eye that I was astonished to find decided central opacities.

So one can readily understand how the cause of the poor vision cited by Dr. Campbell could have been overlooked, especially when one considers the careless and haphazard methods of examination of the majority of the oculists, at the time mentioned in his paper.

G. W. MACKENZIE (Philadelphia): The doctor did not say anything about anterior or posterior lenticonus in his paper.

CAMPBELL: I was not discussing that question; this was an opacity.

H. S. WEAVER (Philadelphia): Dr. Campbell's paper reminded me

of a case that came under my observation some years ago. The patient, a woman with opacities on both lenses from birth, was not entirely blind but continued to have rather dim vision for distance and reading. The condition had been stationary for the last ten years to my knowledge; she then began to develop a cataract in addition. I operated on one eye in January of this year. It was of that peculiar mahogany type that is supposed to present great difficulties in the removal. I believe that I was never so nervous and excited about a case nor had one that was easier or gave better results. Her vision was better than it ever had been; she could read as readily with one eye as I could with both. Her age was sixty-eight; cataract developed two and a half years ago.

ISAAC C. SOULE (Kansas City, Mo.): About eighteen years ago a little girl was brought to me with the statement that the trouble had been pronounced a case of congenital cataract, and that it was necessary that it be needled. I examined her and decided that it was not a case suitable for operation. After correcting glasses had been fitted her vision was $^{20}/_{30}$. I gave her suitable lenses and assured the parents that there was no cause for alarm. I forgot all about the case until about six months ago she returned; she had had another opinion that she needed immediate operation. As she happened to be living not far from this city she came to me.

I found a slight enlargement in the right opacity, and no change in the left. I could judge accurately because I had made a drawing of it eighteen years ago. Under correcting glasses this time, I could get $^{20}/_{20}$. In the eye with the enlarged opacity the best vision was obtained and it is possible that there was no enlargement. The difference, at least, was not great. In that eye I got $^{20}/_{20}$ vision.

C. GURNEE FELLOWS (Chicago): I always like to hear Dr. Campbell read his papers and talk about other people's papers. Most of us here say what we believe but he says what he has proven. He advises us not to make a damaging prognosis, not only because it is not true but also because of its effects upon the patient. In these days we are hearing much about mental effects and mental therapeutics. I believe that there can be no question but what the mental state of a patient has much to do with his physical condition. Health and happiness go together but mental discouragement and health are incompatible. We should be very certain of our prognosis, if it is to be a fatal one. In congenital cataracts of which this paper speaks we do not expect sudden blindness to come on. Even in ordinary cataract where there is to be expected a failure in vision we should be excedingly careful before we give a bad prognosis.

I have seen many mistakes in this way either from recklessness or from conceit. Sometimes I have known a precise date given when the blindness would come on with distressing effects upon the patient's mind; it was unscientific, too, for it proved not to be true. A doctor

brought me a patient fifteen years ago in a very serious condition. Instead of telling the patient that blindness was coming on at a certain date I told him what to do, outlining what could be done at home, with the result that after fifteen years the patient was still having good sight. The point is that emphasis should be put upon that part of diagnosis which deals with a hopeful future.

DR. WEAVER: I want to emphasize what has been said here by Dr. Fellows and others about the need of care in diagnosis and the bad effect of a grave prognosis. A grave prognosis should be based upon the best of reasons. I recently saw an old case of Dr. Ivins that he had made a record of twenty years ago. Dr. Ivins always made a diagram of the opacities of the lens, a rule that I have always followed under his instructions. This case had gone to someone else within the few previous months and had been given a bad prognosis; the verdict was that blindness was only a few months off. She was very much discouraged, sat down and cried so that I could hardly do anything with her at the first visit. I went over the old record in Dr. Ivin's book and compared it with her present state. I found that the vision was better than it had been twenty-two years before. The anterior lenticular opacity had not changed in the whole period. I made some necessary changes in her glasses and told her to go home and rest easy. She reported later that the pain had all left her.

DR. CAMPBELL: I do not think that mankind will ever cease making mistakes; even the best of us will do that occasionally. As for opticians they are the biggest blunderers that we have. Only yesterday an optician in St. Louis told a patient that she had cataract, when she had glaucoma.

One point that I make is that it is important to learn the history of your cases. Had I not had the history of these cases I very likely would have made a mistake myself. Congenital opacities, small in size, unrecognized by the patient are easily overlooked by the most skillful. As to the question of frequency I observe that Zentmeyer reports that he found some degree of opacity in five per cent. of all cases examined by him. If I examine a case of opacity in the lens, the first thing that I think of is cataract; it is perfectly natural that I should do so, because the majority of opacities are ordinary cataract. The object of the paper is to call attention to some overlooked defects of a congenital nature.

GONORRHEAL IRITIS.

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ASIDE from traumatism or extension, it is now generally conceded that iritis is due to some constitutional or systemic disorder. There may be cases of idiopathic iritis, if so they are extremely rare. A careful inquiry into the history of a case of iritis will usually reveal an underlying constitutional disorder. According to statistics, over one-half of the cases of iritis met with are due to syphilis, and those in the secondary stage when the virus is diffusing itself thru the vascular and glandular system.

Tubercular iritis, which is a rare form, always has a tubercular diathesis back of it.

It might be well to mention here before going farther that gout is no longer considered a cause of iritis, if so it is exceedingly rare and then it gives rise to a cyclitis of a chronic form. With it there must be a personal or family history excluding syphilis, rheumatism and gonorrhea.

Next to syphilis, rheumatism is one of the most common causes of iritis. Rheumatism in itself is no longer regarded as being due to lithiasis or oxaluria, but to a specific infection, the diplococcus rheumaticus demonstrated by Poynton and Shaw. The predisposing causes of rheumatism are exposure to colds, sudden changes in temperature and an infective lesion like a septic wound. It is also stated that one-fourth of the cases of rheumatism are hereditary.

Gonorrheal rheumatism is a direct infection, consequently classified by itself. It is due to a systemic infection of the gonococci, or their toxins having entered the circulation. It affects the joints, sheaths of tendons, the bursæ, fascia, nerves, pleura, valves and lining membrane of the heart, the veins, periosteum, the perichondrium, and the eye. It resembles rheumatic gout more than it does rheumatism.

It may make its appearance as early as the first day of the urethral discharge, but it occurs more frequently during the second or third month, or at any period of latent gonorrhea during the gleety stage. In consequence, the disease may remain latent, or indolent, lasting

for months. Women are rarely, if ever, subject to gonorrheal rheumatism, probably on account of the thickness of the lining membrane of the vaginal walls and a more liberal drainage. Systemic infection is more likely to occur if the gonococci invade the urethra. As prevalent as gonorrhea seems to be, it is said that of those who contract the disease only about two per cent. have gonorrheal rheumatism. I am rather inclined to doubt this statement and believe that it is more of a factor as a causation of rheumatism, especially the kind with which iritis is associated. Pathologically there seems to be but little, if any, difference between rheumatic iritis and gonorrheal iritis. Another point which seems to make it more conclusive is, that rheumatism is more prevalent with men than women and so it is with rheumatic iritis. The reason given is that men are more subject to rheumatism on account of out-door exposure, but that is not always the case with those who live in the city. In the city to which my practice and observations have been limited, and where gonorrhea is so prevalent, I have found rheumatism about as frequent.

Some individuals seem to be particularly susceptible to gonorrheal infection, with each attack of urethral inflammation rheumatism ensues, and that the gonococcus is more active with some than others is recognized. Whether it is thru a mixed infection or a personal idiosyncrasy to the toxemia we are not always able to decide. However, an individual idiosyncrasy is attributed to the ocular involvement.

Abernethy, Mackenzie and Ricord are credited with having first described rheumatic gonorrheal ophthalmia. Of gonorrheal iritis there are two forms, one that is nonrelapsing and the other relapsing in character. The nonrelapsing form occurs during the early or acute stage of gonorrhea and is not associated with any changes in the joints or fascia. One or both eyes may be involved and the symptoms may be severe.

Considerable exudation of a bluish-gray lymph is thrown off which sometimes occludes the pupil. If taken in time and under proper treatment, a complete cure can be accomplished. This form of iritis is rather rare. I have seen but one case and that case was a particularly interesting one to me as it caused me a great deal of anxiety at the time.

The case was that of a young man from the vitreous chamber of the right eye of whom I had extracted a piece of iron. I re-

moved the particle through the corneal wound with a Carliczek magnet. The eye rapidly recovered from the injury. Ten months later he returned complaining that both eyes had been slightly inflamed for about a week, but they had given him no special trouble until three days ago, when the left eye became more inflamed than the right. The vision was dim and there was considerable supraorbital pain. On examination, ciliary injection of the left eye was quite marked, tho the right (the formerly injured eye) was but moderately so. There was loss of luster to the iris, contracted and sluggish pupils and cloudiness of the aqueous humor. Neither eye was particularly sensitive to touch, while lacrymation and photophobia were moderate. Apparently there seemed to be sympathetic ophthalmia. I could not quite understand how that could occur, as neither the scale of iron nor the magnet seemed to injure any of the vital tissues, for only the cornea, iris and the margin of the lens were impinged upon. The scale was cast off from a heated bolt, consequently was supposed to be perfectly aseptic. With doubt in mind I began an inquiry for other causes and found that he had contracted gonorrhea but three weeks previously. Under proper treatment of the eyes he made an uninterrupted recovery.

The other form of iritis is associatd with gonorrheal arthritis. It precedes or is associated with swelling or pain in one or more of the joints, the elbow, wrist, hip ankle or the plantar surface of the foot. The latter is a more common location. The iritis may supersede at the time of the arthritis or it may alternate, that is when the inflammation ceases in the joint the iris may become involved, or the reverse. Chronicity is a special feature of the disease, consequently relapses are quite common, but there is a tendency for the disease to subside with advancing years.

The symptoms and pathology of iritis associated with gonorrheal arthritis do not differ from that of the rheumatic form. One or both eyes may be involved at the same time, but usually only one. The severity of the symptoms depends upon the intensity of the attack, therefore inflammation and pain may be moderate or severe. The circumcorneal injection may be but slight or profound. There is loss of luster of the iris; a sluggish or immobile, contracted or irregular pupil; a cloudy aqueous; an effusion of lymph in the pupil; with plastic deposits, photophobia, lacrymation and supraorbital pain. It is said that the exudation is not so plastic as that of the syphilitic form and

that the adhesions are not so firm, and when they do take place they are thin and are easily broken up. The ciliary body may also participate in the inflammatory process and in consequence opacities of the vitreous may occur.

It is stated that gonorrheal rheumatism is seldom found in women, therefore I wish to cite a case, the only one that I have had that I thought was due to gonorrheal infection.

The patient was a married woman, age 30, had suffered from recurrent attacks of iritis for the past three years. The first attack was very severe and painful, lasting about three months. Since then each attack has been less so and not so prolonged. They are ushered in with marked dimness or cloudiness of vision, first one eye then the other. At the time I saw her the left eye was involved, but within a short time the right followed. The circumcorneal injection was but slight, just a faint trace. The iris was then under the influence of homatropin, which she had learned to use whenever an attack occurred. She had used atropin and duboisin so long that she could not tolerate either drug. The pupils were dilated fully and regularly and there was quite a marked cloudiness of the aqueous humor. Although suffering from an uneasy feeling, pain was not present. Mentally she was greatly disturbed with fear of complete loss of vision at some future time. Her case had been diagnosed and she had been treated for syphilis. Under treatment, in about three weeks, the vision of the left eye cleared up and with a lens for the correction of her astigmia the vision was normal, but the vision of the right eye remained cloudy. On the posterior surface of the cornea could be seen under strong magnified illumination an aggregation of minute dots, a formation from the exudation which at the present time is gradually clearing. At the first visit I could not in any manner find the least trace of a specific history. I based my diagnosis on the history of a vaginal discharge, which as near as she could remember occurred some time after the birth of a child then six years old, and that the vaginal discharge had since become chronic and troublesome. She had rheumatism but it did not distress her to any great degree. A hand would get puffy, a wrist joint lame, or an ankle. She remembered that prior to her first attack her ankle was quite lame and when it ceased troubling her the iritis began.

Keyes, on Genito-Urinary Diseases, described this particular disease

as being an inflammation of Descemet's membrane (aquo-capsulitis) and says that it is the most common form of an attack. This statement I am inclined to doubt, as I have not seen it before, nor can I find it spoken of by any other author. It was first recognized by Cullerier, a French observer,—so says Keyes.

As to the symptoms, there is only a moderate ciliary injection, the cornea is transparent, a cloudy smoky appearance of the aqueous humor is the most characteristic objective symptom, consequently the vision is dim. There is no pain, but sometimes a sensation of uneasiness about the eye. Photophobia may be mild or absent. Sometimes there is a slight deposit on the posterior surface of the cornea with the escape of a little blood into the aqueous humor. The iris is unaffected, perhaps a little slow in its movements. There is no deformity of the pupil, no change of color of the iris, no other sign of iritis.

As to the treatment of gonorrheal iritis, I have nothing new to offer or different from that of any other form of iritis, unless it is to say that dry heat in the form of the little Japanese stove or the leucodescent light serves best as a local therapeutical agent. These not only relieve supraorbital pain, but assist in shortening the course of the disease. Atropin instillations should be applied according to the pain, every one or two hours if the pain is severe, care being taken to avoid the poisonous effects of the drug by tilting the head to the temple side when instilling into the eye and after a few moments wiping it out toward the outer canthus.

For the greatly lauded dionin, it has proven for me more of an aggravation than a benefit.

Of the numerous remedies at our command, mercurius solubilis seems to be almost a specific, if ever a drug was for a disease. It is certainly more often indicated than any other remedy.

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DISCUSSION.

DR. HOWARD IVINS, (Trenton, N. J.): I infer from this paper that Dr. George thinks gonorrhea is the cause of more so-called cases of rheumatic iritis, than rheumatism per se, the iritis being really a sequela of the gonorrheal rheumatism; the true cause of rheumatism not having been correctly diagnosed. The two cases he cites are very interesting and instructive. As regards the treatment, I have found dry heat the best local therapeutic agent, combined with atropin, as Dr.

George states. I have not used the leucodescent light, but have a solar-therapeutic light which has given marked relief to the pain. I think I have found more benefit from mercurius vivus than the solubilis.

C. JOSEPH SWAN, (Chicago): There is one point made by this paper that is especially worthy of being borne in mind, at least it struck me as peculiar. The doctor states that iritis does not occur as the result of gout. The question arises what is gout and what is rheumatism? How do they differ from each other as a cause of iris inflammation? It is possible that I may be hazy about the subject, but I regard rheumatism as an infectious disease due to a specific micro-organism, while gout is really an auto-intoxication due to poor or defective elimination, sometimes called lithemia. The manifestations of gout are extremely diverse and many conditions generally classed under the head of eczema and rheumatism are really manifestations of gout.

To my mind iritis is very frequently a manifestation of defective elimination or of a gouty condition. I think that it is questionable whether gonorrheal iritis ever occurs except where it is complicated with what I am in the habit of calling gouty conditions. It is a question whether we ever see a case of pure gonorrheal iritis.

If we have iritis with the gonococcus in the discharges, we have surely a serious condition; if the gonococcus behaves there as it does in other places it would be very destructive and not at all mild. As to idiopathic iritis, idiopathic conditions are becoming rarer and rarer as we make new discoveries in bacteriology, and a time is probably coming when there will be no idiopathic conditions.

At present, in my experience, the most frequent cause of iritis is what I call a gouty condition and I treat my patients along the line of encouraging elimination. As a more direct cause, trouble in the sinuses has become a prolific source of iritis. The nose should be examined carefully in all cases of iritis as a probable source of infection.

I do not believe any of the cases reported were gonorrheal iritis, but were simply gouty, or so-called rheumatic iritis. The essayist gives no evidence that cases reported as such were gonorrheal.

E. W. BEEBE, (Milwaukee): I would like to know the habits of the members present in regard to the use of atropin in treating iritis; I would like to know what strength is used and how the application is made? It has been my habit to use the crude atropin with the crude dionin once in every two hours until positive relief of the suffering is obtained. I use them alternately and put the dry powder in the eye. It is a practice that I got from old Dr. Liebold.

G. W. MACKENZIE, (Philadelphia): It is common practice in Fuchs's clinic to use both these substances in the eye in the dry form, the frequency depends upon the reaction. Cold applications are used after the dionin; the atropin is used every few hours until they get sufficient dilatation. I suppose that altogether a half grain or more is used.

J. A. CAMPBELL, (St. Louis): Is it not a fact that you do not get any action from either of these substances until they are dissolved?

DR. MACKENZIE: Perhaps not, but the practical reason for using the dry substance is that a strong solution produces too much irritation while the powdered atropin acts just about right.

DR. CAMPBELL: As long as it lies dry there you get no action at all; the fluids of the eye must dissolve it.

DR. GEORGE: Is there not danger of poisoning from the use of atropin in this way? I have had bad cases of poisoning from the crude atropin getting into the sac.

DR. MACKENZIE: The danger of toxic effect is no greater than when the solution is used. One should always take the precaution to press upon the inner canthus and to use the powder on the side towards the outer canthus; the poisonous effect does not come from absorption thru the eye, but because some of the solution runs down into the nose.

DR. BEEBE: We were taught that a four grain solution would be sufficient, but I did not find it so and hence was led to try the dry substance and with better results.

A. E. CROSS, (Worcester, Mass.): It seems to me that when it comes to the diagnosis of iritis as due to gonorrhea, there should be some better evidence for it than that the patient has gonorrhea at the time. Unless I was able to produce a culture of gonococci from the discharge, or found the germ actually present in the discharge, I should regard it as extremely doubtful. We are not justified in pronouncing iritis to be of gonorrheal origin unless we have some positive evidence of the fact.

D. W. MILLER, (Blackwell, Okl.): I desire to state that I have used atropin sulphate in the crude form in a great many cases and have never had the slightest toxic effects from it. I always take the necessary precaution of placing the finger over the sac. I will also say that you get a more decided effect from the crude than from any solution that you can use.

DR. GEORGE: I stated in my paper that gonorrheal iritis was similar to the so-called gouty form. In the gouty form, which I claimed to be rare, we must arrive at a diagnosis by the exclusion of syphilis and gonorrhea, and we should have a history of gout or at least of a tendency to gout. It seems probable to me that a great many cases attributed to gout were really due to the gonorrheal infection.

It is not an easy matter to get patients to confess to gonorrhea; their evasions are apt to mislead us and we are obliged to make our diagnosis on an imperfect history, with the result that we call it gouty when it is something else.

In looking up the subject in the modern works, I found that gouty iritis was not considered as a distinct pathological entity. In regard to atropin I use nothing except a four-grain solution; after instilling

it into the eye I incline the head outwards and hold the lower lid down —at the same time pressing on the canthus. If I wish to increase the effect of the atropin I apply dry heat or a hot fomentation. Heat increases the action of atropin always. The one time that I used the dry atropin I had the worst case of poisoning that I ever had at all; with delirium, suppression of urine and flushed face; these symptoms did not disappear until twelve hours later. I do not see how you can get any effects from the dry atropin whatever until the secretions of the eye have dissolved them. I have never had any experience with the subconjunctival use of the drug.

CHRONIC DACRYOCYSTITIS.

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EVERY one who has had much to do with the treatment of chronic dacryocystitis must admit that it often taxes the patience of both the physician and patient. Many times I have met with cases of long standing that had been probed at various times, but the treatment had finally been given up by the patient as being too painful, too tedious and too uncertain as to results.

A volume might be profitably written on this subject covering history, etiology, pathology and the various methods that have been and are being employed in its treatment, but it is my desire to bring to your attention simply a certain line of treatment for this trying disease. Not because it is original, or because it is new, but because it appeals to me as being a very simple and effective remedy, in many cases.

I refer to the use of the canula in the lacrimal duct. My personal experience along this line has not been an especially wide one, but as the results in cases where I have employed it have thus far been so uniformly good, I feel justified in saying a word in its favor.

It is my custom to begin the treatment of a case by cutting up the lower canaliculus, if this has not already been done previously, as far as is necessary to allow a number eight or nine probe to be passed to the nose. Starting with the smaller probes, I gradually dilate the duct until a number eight or nine can be passed without much force. This usually covers a period of ten days or two weeks, having the patient visit the office every second or third day. At each visit I carefully syringe out the lacrimal sac with a ten per cent. solution of argyrol, forcing it to the nose if possible.

When the duct has been sufficiently dilated, I pass a small probe to the nose and by inspection it is located beneath the inferior turbinate. It is then drawn upward, so that the lower end is about five millimeters from the floor of the inferior meatus. Then with the thumb and finger grasping the probe as close to the canaliculus as possible it is withdrawn, and the distance from the canaliculus to the inferior meatus, thus measured off, will aid in selecting a canula of suitable length.

Quite a variety have been devised, but the shape that I have found to be the most serviceable has been one having the upper part bent at right angles to the portion that extends into the duct, and with the upper surface of the arm that rests in the canaliculus left open so that it forms a little trough that can be fitted into the canaliculis.

The tube is passed into the duct in the same manner as the probe. Special care should be taken to have the arm that rests in the canaliculus of the proper length. If it is too long it will rub against the eyeball and cause irritation.

After it is in place, one should determine the location of the lower end in the nose. This should rest well clear of the floor of the inferior meatus, and its position relative to the inferior turbinate should be such that it will not be closed by any swelling of the turbinal tissue.

In some cases it has been necessary to remove a portion of the inferior turbinate in order to secure free drainage.

Occasionally there is trouble from the tube becoming clogged by the secretions from the conjunctiva or sac, but it can usually be readily cleared by instructing the patient to close nose and mouth, and force air up the tube from the lungs.

Some of my patients have learned to clear out the tube themselves, by passing a fine wire down thru from above, but there is seldom trouble from clogging after the tube has been worn a short time, as the mucopurulent discharge usually promptly ceases as soon as free drainage to the nose has been re-established.

After the canula has been worn a few months, it can be removed permanently in many cases.

This method of treatment is not applicable to all cases. I would not advise it in those of short duration; there, I believe, the use of the probes and thoro syringing of the lacrimal sac with argyrol, boric acid or silver nitrate solutions should be tried first, but in many of the chronic cases that have failed to yield to other treatment a carefully fitted canula will bring speedy and welcome relief.

METHODS OF REDUCING INCREASED INTRA-OCULAR TENSION—CYCLODIALYSIS.

IRA O. DENMAN, M. D.,

Toledo, O.

THERE is no more important subject in the field of ophthalmology than that of increased intra-ocular tension and its consequences. While it is not universally agreed that this is always the cause of glaucoma, it is a fact upon which all unite that increased tension, if long continued, will lead to that disease.

I shall not enter into a lengthy discussion of glaucoma, its etiology symptoms or diagnosis, but desire briefly to consider the subject of tension, normal and abnormal, and its relief.

The eye is a hollow almost spherical body. Its shape is maintained by fluids within it. These fluids are secreted within the eye, chiefly by the ciliary body and process, and escape chiefly by way of the angle of the iris and canal of Schlemm. Tension means the degree of pressure that the fluids exert upon the tunics of the eye, and is noramlly maintained by a perfect relation between the secretion and excretion of the fluids.

Lowered or decreased tension we designate minus tension. We are less interested in this ocndition, as it is usually found as a sequela to iridocyclitis with atrophy and there is little to be done of benefit. This condition occurring in an otherwise healthy eye is disastrous, causing detached retina, etc.

Plus tension or increased pressure is, however, the condition of greatest consequence to the oculist and patient. It bulges the tunics of the eye at the points of least resistance, usually the lamina cribrosa, and induces the phenomenon which we know as glaucoma—that serious disease to which the greatest oculists of two continents have directed their studies for more than half a century.

Increased tension may be caused by a hypersecretion of fluids, but is most frequently induced by an obstruction to the drainage or escape of the aqueous from the eye. To the relief and cure of this latter condition science has brought forward a great number of remedial and curative measures.

The medicinal treatment of glaucoma is limited, in my opinion, to the premonitory and very early stages. General measures directed toward securing a free elimination by bowels and kidneys are of value. Local hot applications and instillations of eserin or pilocarpin act as tension lowering agents, and may serve to stave off an attack of glaucoma. They forcibly draw away the iris from the filtration angle and ligamentum pectinatum and temporarily at least permit the escape of the aqueous into Schlemm's canal.

A cure of glaucoma, or at least an arrest of the process, is to be accomplished by surgical treatment, and of the many procedures proposed iridectomy easily heads the list. This operation was first empirically performed by Von Graefe in 1857, and although tens of thousands of cases have been benefited and cured by its employment, it is yet an unsettled question why it will permanently reduce the intra-ocular pressure, altho the fact is undoubted. It is equally uncertain why it fails absolutely in other cases. It is most probable that it succeeds by removing with the excised portion of iris numerous blood vessels, thus decreasing the amount of blood in the eye, and thus lessening the secretion of fluid, and also takes away a part of the obstacle to its free exit at the filtration angle.

A number of writers declare that the ectasia of the corneoscleral wound widens the filtration angle enough to account for the lowered tension, and that the benefits from the iridectomy per se are of minor importance. This theory led to the practice of sclerotomy, but this operation has failed to supercede iridectomy; this is due not only to the great danger of prolapsus of the iris and its incarceration in the corneoscleral wound, but that in the combined experiences of many operators it has been found insufficient, and especially so in the inflammatory forms of glaucoma.

A comparatively recent and desperate measure is the excision of the superior cervical sympathetic ganglion, which has a few admirers and many opponents, but may be practiced after all other known therapeutic measures have failed.

The latest operation is that of **cyclodialysis**, originated and first performed by Heine, of Breslau, about two years ago. An analysis of the name gives it the meaning to separate the ciliary body from the sclera, and has for its object a destruction of a portion of the pectinate ligament by making thro it a rent or tear, and thus establish a free vicarious drainage for the aqueous thro it into the perichoroidal space.

The technique is as follows:—The eye, cleansed, cocainized and speculum inserted, is grasped by a pincette near the limbus on the upper and inner side and is rotated upward and inward by the assistant. The conjunctiva is incised and pushed aside (as in a tenotomy) over the point of scleral incision, which is at the external inferior side about 5 mm. from the limbus and half way between the insertions of the external and inferior recti muscles. The keratome is the preferred instrument and the incision is made with it parallel to the limbus, using the side of the instrument near the point, the point of the instrument being directed toward the operator and the cutting movements always *from* him. One should avoid if possible, in placing his incision, the large scleral vessels (the scleral vessels are always enlarged in eyes requiring such operations) as the hemorrhage, which is always sufficient to keep the assistant busy sponging, becomes so profuse that the subsequent steps of the operation, where one must see well, are rendered quite difficult to perform. When one does encounter a profuse hemorrhage it must be controlled by adrenalin, hot applications or, if necessary, the application of a fine pointed thermocautery before proceeding farther.

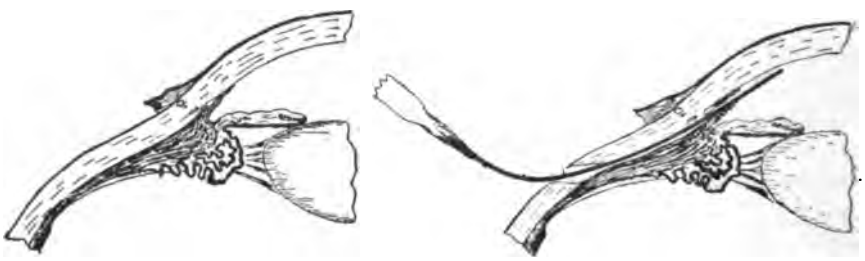
The incision must not be more than 2 mm. in length, which is quite sufficient to admit an ordinary iris spatula, which is the instrument used to complete the operation. Were it longer, the ciliary body would prolapse into the wound and other complications might occur which are impossible in a short cut.

Great care must be exercised in making this incision. The instrument must be lightly applied and many short strokes made, frequently trying the iris spatula and the moment it will enter the incision is complete. After one has performed the operation once or twice, the lessened resistance offered by the sclera as the knife nears the complete severance of this tunic is a valuable guide. The other sign of its completion is the dark color of the uvea, which appears at the bottom of the incision the moment that all the scleral tissue is divided. Extreme caution must be used at this point not to injure the ciliary body, either by the lance or by the spatula. If it is injured, you are apprised of it by the hemorrhage and pain. This completes the first part of the operation.

The second step is to insert the spatula. This instrument is bent at an angle of forty-five degrees and the handle is inclined away from the

median line as its point is entered very gently into the wound. No force should be used. If it does not easily pass, the incision must be slightly enlarged, so that preferably the spatula will enter by its own weight and must at once be directed upward and inward toward the inner scleral surface by a quick movement, depressing the handle of the instrument, keeping the point closely applied to the inner scleral surface. The instrument is slowly and carefully inserted still farther toward the anterior chamber, where it encounters the pectinate ligament and a slight resistance is usually felt, but this is easily penetrated and the spatula appears in the anterior chamber, completing the second part of the operation.

Next the "cyclodialysis" is made, by first depressing the handle of the spatula, thus raising the blade to the upper and outer angle of the



A. B.

anterior chamber, then depressing the blade as far as possible, so that the pectinate ligament is destroyed for at least one-fourth of its circumference. The instrument is then withdrawn. This completes the operation and one stitch is taken to close the wound.

The contraction of the circular fibers of the ciliary apparatus has the effect to draw the divided tissues still farther apart, so that there can be no re-union of the parts, and the result is the establishment of the permanent vicarious drainage of the ocular fluids into the superchoroideal space, where its absorption is accomplished by the abundant vascular system of the choroid.

In a procedure so new, my remarks can be little more than suggestive, as I can report from my own practice but two cases and one from that of my brother, Dr. George Denman. Its success in European clinics, however, is most gratifying. In the Fuchs Clinic, Vienna, the

fortieth cyclodialysis was performed during our studies there last year with nearly one hundred per cent. success.

I do not wish to be understood as exalting the merits of this operation over all others, especially iridectomy, but I do believe it should receive consideration as a therapeutic measure.

Dr. T. Henderson, in the *British Medical Journal,* November, 1907, claims that the "causal factor of glaucoma exists in a primary obstruction and closure of the pectinate ligament due to sclerosis of the fibrous structures about the filtration area, and all other changes are secondary to this. The hindrance to the aqueous outflow does not arise from the peripheral anterior synechia so frequently met in glaucoma, but is caused by the closure of the interspaces of the pectinate ligament in consequence of the fibrosis of the cells of its connective tissue stroma, and the formation of a homogeneous membrane around these fibrous bundles leading to the endothelial cells being first brought into contact and then welded together with fibrous structures."

If this be true, then is not the partial destruction of this impenetrable area, opening thereby an artificial gateway, a logical procedure? Let me in this connection remind you that an iridectomy to be effective in glaucoma must be a *deep* one. In order to make a deep one the iris must be forcibly drawn out. Is the suggestion worth while that in this manipulation a small portion of the pectinate ligament is inadvertently broken and thus a cyclodialysis crudely and unwittingly performed, thus affording relief of tension and pain which is perhaps too often unfairly accorded to the somewhat mysterious effects of an iridectomy? Perhaps, too, the reason that a *shallow* iridectomy fails is because the traction is insufficient to cause such rupture of the filtration angle and thus no relief is secured. My case report follows:—

No. 1. Mrs. S., aged 55, had light glaucomatous attacks for four years from once to two and three times weekly. Severe pain, tension plus 1, vision diminished a very little, could see 20/30. Ophthalmoscope showed vessels slightly displaced to nasal side, shallow cup. Attacks were increasing in frequency and severity under physostigmin. I performed cyclodialysis upon both eyes, the operations being made ten days apart, and in five months there has been no return of the attacks. Vision remains the same, 20/30, tension normal.

No. 2. Mr. L., aged 48. Trouble began as a severe iridocyclitis; abundant deposits of precipitate on the posterior surface of the cornea;

rapid rising tension, excruciating pain, vision reduced to light perception only. An iridectomy had afforded no relief, and was repeated on the other side with no effect. Pain unbearable. Enucleation advised, and at this juncture I saw the case and performed a posterior sclerotomy, evacuating a considerable quantity of vitreous with immediate lowering of tension and cessation of pain, which however was only temporary, as in a few days the same conditions returned. Cyclodialysis was then made and the eye, while blind, has not given the patient any discomfort in seven months, and suits him much better than a glass eye.

No. 3. This case is reported from the practice of my brother. Mr. K. came to him in September, 1907, with excruciating pain in the right eye of a few hours' duration. Tension greatly increased, anterior chamber almost obliterated. Ophthalmoscopic examination was impossible owing to a cataractous lens. Diagnosis of acute inflammatory glaucoma was made and immediate palliative measures prescribed. Instillations of eserin and compresses locally, together with saline internally, were of no benefit, and twelve hours later a deep iridectomy was performed. This gave relief for only two days and pain returned with such severity that the patient begged to have the eye enucleated. Cyclodialysis was performed and the patient returned home in a week quite comfortable. My brother saw him again two weeks after operation and again recently. There has been no return of pain. The tension is normal.

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DISCUSSION.

BURTON HASELTINE (Chicago): This is an important subject, but we cannot estimate its importance until we have a larger reported experience. My own experience is a curious one. I attempted to use this procedure without the excellent description of technique that Dr. Denman has given us and of course did not do it so nicely. It was a desperate case, too, as the patient had only one eye. I performed an iridectomy that seemed to be a good one, but without relief; the tension was relieved for perhaps twenty-four hours and then became as before. I then did a sclerotomy and a very liberal one which also relieved, but only temporarily; the increased tension returned within a week.

I then attempted a cyclodialysis, with a cataract knife. I made an incision through the sclera and then cautiously inserted the cataract knife through the wound until it entered the anterior chamber, breaking the ligament away as well as I could. The result was pleasing ap-

parently and I had no further trouble with the eye that I could attribute to tension. I was later obliged to extract an opaque lens, which was a difficult matter but I was lucky enough to get it out in good shape. The patient made a quick recovery and had twenty-thirtieths at a period of four months after the operation. I attribute this good result to luck rather than to any skill on my part. The excellent description of the technique given in the paper will help us greatly.

C. JOSEPH SWAN (Chicago): I believe this new operation is a very useful procedure; it should have a field in many glaucomatous conditions, in degeneration of the choroid and sudden reduction of the tension from iridectomies and loss of the aqueous fluid, such as render a case very liable to hemorrhage. I can recall a number of cases in which it would have been of great advantage if I had known of this cyclodialysis. In one case in which the patient had lost the eye from a hæmorrhage shortly after the operation; this of course necessitated an iridectomy upon the other eye; with this operation this eye might have been saved.

The paper speaks of different methods of reducing tension, such as using eserin, pilocarpin and so on. I have found one very useful and simple procedure that I want you to try. It may seem quite futile but it is very successful; not perhaps in a plus three tension, but in a plus two tension it will temporarily reduce it as nothing else that I know of will. It is *massage with the thumb;* this, done for five minutes a day, will keep it down wonderfully. I use a rotary motion with the thumb, at the same time making pressure. You will be surprised at the excellent and immediate results. In some cases where the lens has been forced out against the cornea it can be replaced and the tension reduced at the same time by the treatment that I speak of. It puts things in shape and gives nature an opportunity to restore order.

In a case of chronic glaucoma that I had, I performed an iridectomy; an acute attack of glaucoma followed, the lens was pushed right up against the cornea, the anterior chamber being obliterated. I did a posterior sclerotomy and put on a bandage. In twenty-four hours the tension was normal and the patient recovered.

The keratome is a very difficult instrument to use; it must be kept extremely sharp and it has to be used with the fixation forceps in place. They should not pinch the tissues and should be applied behind the keratome; this will facilitate the action of the keratome.

H. S. WEAVER (Philadelphia): It was a revelation to me to see the amount of reduction of ocular tension that Dr. Soulé could get in five or ten minutes with his suction and break treatment. In these cases of chronic glaucoma where the tension is probably plus one do our members operate upon them?

I have a case now that is giving me a great deal of anxiety. A woman came to me two and half years ago with a plus 2 tension and vision of twenty one-hundredths. I put her on eserin and have

kept her on eserin ever since. At the present time the tension is plus one and the vision is twenty-twentieths with a slight reduction of the field. The eserin holds the pupil down to a pin point without any trouble, using only a drop of one per cent. solution daily. The question is, should I operate on such a case? I do not know whether I am doing right or not in letting it go without operation. The eserin has been used almost every day, now for two and a half years. Several times the solution has become discolored and she has gone for a few days without it and the pupil has dilated immediately. There has been no change in the strength of the solution.

D. W. WELLS (Boston): How is the applicator that Dr Soulé uses applied?

DR. WEAVER: He has cups of three different sizes for his cases; they are applied immediately over the socket of the eye, the cup completely encircles the eye and makes an airtight space. He uses his own pump especially devised by himself. I saw it used on a child with complete paralysis of the ciliary muscle, and in another case of ciliary paralysis in an adult woman that has lasted several months; she does not know the cause of it. It was as complete in both cases as if you had used a strong solution of atropin. The results of the treatments were remarkable.

DR. WELLS: Did you personally see him treat a case and feel the reduction of the tension?

DR. WEAVER: Yes, sir; when he got through with the treatment the tension was minus.

DR. WELLS: How long did the treatment last?

DR. WEAVER: It was applied for about five minutes.

C. GURNEE FELLOWS (Chicago): Was it a rapid stroke?

DR. WEAVER: No, not very; more rapid than he uses for the ear I think. After getting through with the suction and break treatment he used the high frequency current. At the start of treating a case he applies the treatment only for three minutes, and lengthens the time at the subsequent treatments.

H. D. SCHENCK (Brooklyn): Dr. Soulé said in his paper that he uses 180 strokes per minute in aural diseases and a little faster than that for the eye.

DR. SWAN: I do not think that there is any advantage in the machine massage over that which can be done with the thumb. Massage will reduce the tension no matter how it is applied.

DR. WELLS: Do you ever have the patient do the massaging him or herself?

DR. SWAN: No, but I do allow the nurse to do it.

DR. WEAVER: This is a regular suction and break that cannot be imitated with the thumb; the absolute regularity of the stroke cannot be maintained.

G. W. MACKENZIE (Philadelphia): We all recognize that massage

is an important form of treatment in glaucoma. The operation of cyclodialysis is not widely known as yet. As to the operation itself, Dr. Meller has performed more such operations than anyone else. He does not advocate the operation universally, but only in certain cases where the tension is quite marked—plus 3 or higher, when an iridectomy would be dangerous on account of excessive hæmorrhage; his intention was to do it only as preliminary to iridectomy. Up to four months ago he had operated upon forty cases without any failures and never had hæmorrhage. In most of the cases the tension was very marked so that it was impossible to perform any operation except a paracentesis or cyclodialyis.

Meller spoke of his success at a meeting of eye specialists in Vienna and was challenged by Schnabel and Lauber who said that he should show cases. Dr. Meller asked permission to show his cases at the subsequent meeting, and strange to say none of his challengers put in an appearance. I knew several of the cases that he operated. One woman had had repeated attacks of glaucoma; her condition was such that it was inadvisable to do an iridectomy. He did a cyclodialysis on her and she improved so much that she refused further operative interference and for two years the tension remained reduced. She was kept in the hospital a long time and watched for rise of tension.

Dr. Denman's paper is a very useful one as introducing a new subject and no one in this country is more capable of properly describing the methods and technique of cyclodialysis than he.

J. A. CAMPBELL (St. Louis): What was the result in that case so far as vision was concerned?

DR. MACKENZIE: I cannot give you the details of that; the result as to vision would be about the same as from any other method for the reduction of tension.

DR. HASELTINE: Is this operation to be considered as taking the place of iridectomy?

DR. MACKENZIE: No. It was considered merely a preliminary operation to an iridectomy, but the patients generally have found themselves so much improved that as a rule they have refused any further operation. The result is often better than that from iridectomy; the latter is not an absolutely reliable operation, for the reason that it is often impossible to get to the root of the iris, the actual seat of the trouble (peripheral synechia).

DR. CAMPBELL: This is the most interesting subject I have heard discussed this year. The operation is entirely new to me. Cyclodialysis as described by Dr. Denman seems to me to have the same object in view as all other operations for the cure or relief of glaucoma, namely: to saw the filtration angle through. I have bored this society several times on the subject of glaucoma and have held to the idea that it is a reflex-neurosis disease. I am intensely interested in the subject and in anything that promises relief. If this operation will

reduce the tension and improve the vision, especially the last, it is all that we can ask of it. I have a case in which there has been increased tension for 14 years and yet we have managed to keep the vision good all that time without any operation. If we can do that without operation it seems to be the most sensible thing to do.

In the consideration of this subject there must be a distinction made between simple glaucoma and inflammatory glaucoma. For the latter there is almost nothing to do except operate. The question is what kind of operation, and various answers have been given. I can look back for thirty years and every year or two there has been some new thing just like this for the cure of glaucoma; some of you remember, perhaps, the gold wire drainage of De Wecker which was to be put thro the vitreous chamber. I do not think that cyclodialysis has been used long enough to establish its claim as a cure of glaucoma. I was interested in an article in the Journal of the American Medical Association, 1907, written by Fels, in which he discusses the relative value of operative and therapeutic measures in the treatment of glaucoma; he shows that the results are more favorable from the use of myotics than from iridectomy. Now if that is the case, and it seems to have been thoroly discussed, it is a daring thing to advise any operation in this disease, unless we can be more sure of favorable results than we are at present.

Suppose you have a case of serious injury to the eye in that region; you immediately ask yourself what are the chances of sympathetic ophthalmia here? Does anyone know whether there has ever been a case of sympathetic ophthalmia after this operation? Why should the patient be safe from it after this operation and yet be in danger of it from an accident in the same region?

I have a string of these cases under observation; I have reported cases where I have watched them for six, ten or fifteen years where the tension was diminished by nonoperative treatment. I want to call attention to this fact, one that is not generally known; it is possible to have a case of *glaucoma without increased tension.* I have seen it myself and I am pleased to notice that Zentmeyer has recently reported a case of glaucoma without tension. I believe that we are absolutely ignorant of the cause of this disease, but it is my opinion that it is a reflex neurosis from beginning to end.

I have frequently tried iridectomy and other operations for its relief but never in the ciliary region, separating the ciliary body, and I have reported a number of cases very much improved by these measures. The introducers of new measures should wait a while and see how the result stands the test of time and also see whether the procedure improves the vision.

G. D. ARNDT (Mt. Vernon, O.): I wish to call attention to the cervical region in treatment of glaucoma. The deep muscles are likely to be tense, and there will be tenderness of the superior cervical sym-

pathetic plexus. My attention was first directed to this region by an osteopathic physician several years ago and I have been able to control tension and pain in nearly every case I have had to treat since then by vibratory stimulation of this region in connection with the use of eserin. The influence of the sympathetic nerve on circulation in the ciliary processes justifies the belief that stimulation of the plexus will lower intra-ocular tension, the sympathetic being vasoconstrictor.

DR. WELLS: I wish Dr. Denman would state, in closing the discussion, how he uses the keratome and what shape keratome is the best. I understood him to say that he uses the side of the keratome in making the incision through the sclera; I do not just see that. What size keratome does he use?

DR. DENMAN: The point of the keratome is turned downward, the side near the point is placed against the sclera and the strokes are made upward, watching carefully all the while the severing of the scleral fibers and for the appearance of the dark color of the uveal tissue. The keratome should be of convenient size; that is not a matter of great importance.

DR. HASELTINE: Could it not be performed with a cataract knife?

DR. DENMAN: Yes, but I prefer the keratome because it is more easily controlled. In answering Dr. Campbell, it may seem presumptuous to try to explain anything to one who was studying in Vienna the year I was born. In regard to the effect of this operation upon vision the expectation should be, and experience has proven, that the sight returns at least as well as after an iridectomy because there is no scar and the normal pupil is maintained. It therefore offers better sight than iridectomy. In regard to sympathetic ophthalmia there is hardly any danger of that as compared to an accident, for it is considered bungling to injure the ciliary and if injured it is an aseptic wound as against an infected accidental injury.

The scleral fibers are severed with the reversed point of the keratome watching closely for the appearance of the dark color of the uveal tract. It can be done without wounding the ciliary body.

There are five conditions in which we should consider the applicability of this operation: (1) Dislocation of the lens into the vitreous where iridectomy would be liable to be followed by expulsive hæmorrhage, pushing of the iris forward and prolapse of the vitreous. (2) It should be considered also in cases where one eye has been lost throhæmorrhage or malignant glaucoma and the other eye requires an operation. (3) Then it should be considered in secondary glaucoma following injury or inflammation of the cornea. The anterior chamber is apt to be very shallow and there is very little of the iris to excise and the high tension makes an iridectomy almost impossible. Cyclodialysis could then be undertaken with a great deal of confidence; a separation of the iris from the cornea may be attempted. Finally this operation should be considered in return of tension after cataract ex-

traction where formerly it was always an iridectomy. It is very valuable there.

Dr. Meller prefers to make cyclodialysis without loss of aqueous. This is done by holding the spatula flat in the wound; if you want to allow some of the aqueous to escape it is done by slightly turning the spatula.

Dr. Meller had one case of acute iridocyclitis which the operation seemed to make worse and which he could not explain. Forty-eight per cent. of his cases were absolute glaucoma. He undertook these for two reasons; first because vision was gone and there was nothing to lose, and second they were the most trying cases he had. Out of this lot only six failed to receive great benefit and even these six were relieved. He had one case in the hospital in which the benefit was so great that the woman would not give her consent to the iridectomy that he wanted to perform. He kept her a while and even stopped the use of myotics hoping to precipitate an attack of glaucoma to get her consent to an operation, without succeeding. That may seem rather cold blooded but it is the way they do things over there. Her vision was six-eighteenths.

In regard to the danger of hæmorrhage, it may occur in the anterior chamber from the original incision or from faulty insertion of the spatula into the anterior chamber. This of course endangers your results; it comes from the initial cut wounding the anterior ciliary vessels. It is important to avoid this. Another source of hæmorrhage is applying the knife too close to the canal of Schlemm; the pectinate ligament forms the posterior wall of the canal of Schlemm. My paper is written according to the theory of Heine, which is disputed by some of the men over there. Some claim that the operation opens the canal of Schlemm very wide, and Krause has made experiments upon animals' eyes to prove it. His claim is that the tension returns immediately and that after thirty-six hours the incision does not heal, and thus allows the escape of fluid.

Dr. Swan: How much of the pectinate ligament do you tear away?

Dr. Denman: About one-quarter.

CONGENITAL BONY OCCLUSION OF THE POSTNASAL SPACE.

H. S. WEAVER, M. D.,

Philadelphia, Penn.

THE case which I wish to report presented such a rare and unusual complication or malformation in the postnasal space that I thought it would be interesting to the members of the O., O. and L. Society.

I have been looking up in Gould and Pyle on anomalies in medicine and find only three cases reported. In these no mention is made as to whether the occlusion was bony or membranous. These cases were reported by Hubbell, Ronaldson and Luscha in the *Edinboro Medical Journal.*

The probable cause of this malformation. Early in gestation there are formed the visceral arches, five in number, which are best defined about the end of the 5th or 6th week. The first V. A. divides into two parts, the upper forming the maxillary arch and the lower the mandibular or jaw arch. The maxillaries grow towards the median line and about the 40th day come together, first anteriorly and by uniting with the nasofrontal process form the upper boundary to the oral cavity. By this metamorphosis of the maxillary processes the permanent division of the oral and nasal cavities is formed. The only cause for this bony malformation it would seem to me would be from an overgrowth of the maxillary process of the frontal bone in its union with the two lateral arches.

Miss R., aged 16. The family history as far as we could obtain is free from tuberculosis or syphilis. Immediately after birth the parents noticed that the child could not nurse, but they did not know what caused this inability. The child did not develop, and by the end of the first month was simply a skeleton. Feeding the child with the spoon was then commenced and kept up at regular intervals. Improvement soon followed and the little one was raised in this way. According to the picture which I have seen of her as a child it showed a marked lack of development very similar to that found in adenoid conditions, only in an aggravated form.

The child's growth, while stunted, was regular and symmetrical until about four years ago, when they noticed a beginning curvature of the spine which gradually increased and when I saw her first a year and a half ago this deformity was well marked and the child showed every indication of a beginning general tuberculosis. The typical adenoid expression was present combined with the anemic tubercular appearance so familiar to all of you.

I made a diagnosis of adenoids and some obstruction of the nares but was unable to complete the examination due to the extreme nervousness of the patient. An operation under a general anesthetic for the removal of the adenoids was advised, so in January, 1907, I removed a large quantity of adenoid tissue and for the first time was able to examine carefully her nose anteriorly and posteriorly, finding a hard bony wall filling up the posterior end of the nares.

The postnasal space was contracted, but fairly regular and completely shut off from the nasal cavity by this bony wall. The anterior nares with the exception of being diminished in size were about normal in appearance. Both anterior nasal cavities were filled with decomposing mucus, stringy in character and offensive. This could only be removed by the child's lying on the stomach with the face down and the head low, the secretion then dropped anteriorly so that by pressure on the nostrils a partial emptying of the nose could be accomplished. The child's unhealthy, emaciated appearance at the time I first saw her was in a great measure I believe due to the absorption of pus retained in her nose and accessory cavities.

The removal of her adenoids gave her some relief of symptoms and she commenced to pick up in weight. In May, 1907, I etherized her again and with a long bone drill succeeded in opening up a small hole connecting the anterior and posterior nares.

Keeping my finger in the postnasal space as a guide I filed away the bony portion on the left side until I could introduce my finger. The hæmorrhage was only moderately severe and by packing was soon controlled. I repacked every forty-eight hours for the first week then used no packing, simply cleansing solutions and applications of glycerine and iodine locally to hasten the healing process.

My troubles only began at this point and now there was a fight to the finish to keep the opening through this bony wall from closing. Time and perseverance wore out and in about three months everything

was healed and my patient could breathe with her mouth closed; the opening in the one side being of sufficient size to enable free, uninterrupted nasal respiration at all times. The improvement in the patient from this time on was marvelous.

In six months she had gained 20 pounds. The curvature of the spine was improved by wearing casts put on by Dr. Hammond. The relief in every way was so marked that she insisted upon the second operation on the right side of the nose. This was done last January in a similar manner to the left; but was much easier owing to the guide we had to the direction of our drilling from a probe inserted into the left side through the opening made at the first operation. Another desperate fight to keep this free followed and a second etherization was necessary to stretch the opening due to cicatricial contraction owing to an absence from the city for five days being necessary, and no treatment could be had, therefore a closure of the aperture.

The contraction of the scar tissue with resulting closure of the opening was more marked on the right side than the left, but all is healed at the present time and she breathes well through both sides.

It required nearly five months' continuous treatment to win out on this side. The best results were obtained by gently cleansing the nostrils and applying glycerine and iodine, 5 grains to the ounce, alternating this with nitrate silver 5 to 10 grains to the ounce.

The treatment of this case other than operation was simply dietetic, hygienic and mechanical for the correction of her spinal curvature. The results were marvelous. Her general health is good, she is bright and active, and has gained over 25 pounds. She breathes most of the time through her nose and gives every indication that she will become in time a healthy woman.

1433 Spruce Street.

MY EXPERIENCE WITH THE RETINOSCOPE.

W. H. PHILLIPS, M. D.,

Cleveland, O.

I REMEMBER saying some years ago at a medical meeting to an oculist several years my senior: "Do you have much difficulty in locating accurately the axes of your cylinders?" "Why, no," he replied, "the retinoscope always gives me the exact axis, and with no difficulty whatever." Upon inquiry as to method of use I found that this man used a large concave mirror with the gas light above the patient's head, and this retinoscope examination occupied from one to two minutes of his time. This was a revelation to me. My early training had been with the Thorington plane mirror, the 5-10 mm. light opening and the source of light as near the observer's eye as possible; although I had practiced with it faithfully and it had been of great service, I had never been able to attain the perfection to which this man confesed.

Since then I have tried various methods—for the past two or three years I have been using DeZeng's luminous 'scope—but it seems to me that the method has little to do with results.

Each method possesses some advantage the others have not, but when all the advantages and disadvantages are weighed together, it seems as though they about balance.

Retinoscopy itself has its limits, in many cases it is of no value whatever, in others its value depends wholly upon the skill and expertness of the one using it, and I am convinced that an expert using one method can get just as accurate results as another expert using any other method; the same with the 'scope itself.

Personally I like the DeZeng instrument, although it has one serious drawback: it has been impossible for me to find a lamp for it the fiber of which does not cast a line of light on the cornea which greatly resembles the bar due to astigmia. For a beginner this is very confusing, and even after three years' experience it is still a source of annoyance and error. On the other hand the absence of heat, the ease of manipulation and the brilliancy of the image are certain great advantages.

Cycloplegia. Forty-nine out of fifty of my patients are fitted under a cycloplegic, *i. e.*, cycloplegics are used in determining the refractive error, altho the fitting is usually completed after the cycloplegia has pased away. Under full cycloplegia I aim first to determine the amount and axis of the cylinder, if astigmia be present, and I work at the distance which gives me the clearest image, whether that be a meter or a third of a meter. To find this distance I place before the eye a sphere that gives me the anterior focal point somewhere within a meter's distance. If now my image is clear I work at this point, if not I add to or subtract from the sphere and move up or back till I get the clearest reflex possible. Now, if the astigmic bar be present, with the axonometer I endeavor to locate accurately its axis. Having found this, I measure the amount with cylinders as accurately as possible. The astigmic amount and axis remain constant at all distances, so having once found them I remove the sphere leaving the cylinder in position, and move back to exactly one meter's distance. Now I adjust my sphere. This method works splendidly in mixed astigmia where the minus cylinder is less than 4 D. By moving up to one-third of a meter's distance the astigmia becomes of the simple hypermetropic variety and is corrected by simple plus cylinders. With the cylinder found, moving back to a meter's distance, minus spheres are added till the correction is completed. We now have the combination most commonly prescribed, a plus cylinder over a minus sphere, instead of the awkward combination cylinders which must later be translated into the sphero-cylinder.

I have occasionally found my retinoscope invaluable in the post-cycloplegia tests which I usually make. One not frequently finds the amount and axis of his cylinder slightly changed after cycloplegia has worn off, and the retinoscope is good confirmative evidence of this change.

The difficulties. Of course anything which interferes with the transparency of the ocular media is more or less of a bar to retinoscopy. Gross changes in the corneal curvature, as conical cornea, irregular astigmia and high grades of refractive error, all render retinoscopy more or less unserviceable. Spherical aberration, positive or negative —which occurs not infrequently in the lower grades of error as well as the higher—occasionally renders accurate examination exceedingly difficult even if the small hole disc be used. A supersensitive retina

and those conditions of the fundus known as "fluffy," irritable choroid, and accompanied often by accommodative spasm and spasmodic esophoria, are conditions which will try the metal and patience of the most expert. They are usually associated with the lesser grades of myopia, often asymetric, with astigmia, and even under a full cycloplegia the axes and amounts will shift with kaleidoscopic swiftness, due possibly to varying lid pressure or the action of the extrinsic muscles.

Results. In perhaps sixty per cent. of one's cases retinoscopy is easy and satisfactory, and results will correspond very closely to those obtained at the test case. In 10 per cent. retinoscopy is of no service; in the other 30 per cent. its value depends upon the man behind the gun.

In all cases I use it as part only of the evidence in the case, yet so much dependence do I put upon it that in the event of the test case and the retinoscope disagreeing I will not prescribe but work at it until I find my error, if it is within the bounds of possibility. When they do agree, I am as certain that I am absolutely correct as is possible to be of anything in this world. When I look back over my records and take note of cases wherein I know I failed to satisfy, and where ultimate satisfaction was given, every one shows discrepancies between the retinoscopic and case findings, and all are marked after the retinoscopic tests "unsatisfactory."

DISCUSSION.

PRESIDENT WELLS: In this symposium I would like you to take up several points for discussion. It would be useful to know what mirror you use, whether plane or concave; at what distance do you work; if at one meter, what differences from the lens that turns the shadow do you expect your patient to accept; do you place more reliance on the subjective test lenses or upon retinoscopy?

C. GURNEE FELLOWS (Chicago): I do not know whether it is my superior wisdom or my consummate ignorance that makes me give my experience; I use the retinoscope or the skiascope, whichever you please to call it, early in my examination of the case to determine what I have to deal with, hypermetropia whether of high or low degree and whether with or without astigmia. I get a good deal of quick action by my use of this instrument but I do not depend upon it or put the same confidence in it that I do upon the subjective tests. If I should get into trouble I would depend more upon the subjective tests to get me out of it. I should not accept my personal examination with the retinoscope if it differed from the subjective tests that I had made and

yet I would not like to do without it, any more than without some other instruments of precision.

I use a small instrument with plane mirror on one side and concave on the other; it is small enough to carry in the vest pocket. I do not use any of the machines that are on the market. Very frequently I get an approximate correction. I use skiascopy after the manner that I learned under Morton, of London. I do not use either mirror to the exclusion of the other. The plane mirror with slight pupillary opening and smoked back is a fairly good idea. My findings are acceptible to myself, but possibly would not be to some of the cranks upon the subject.

DEAN W. MYERS (Ann Arbor): I rely largely upon the test case and verify its results at the end by other methods, but if other methods do not agree I place most reliance upon the first. In practical work the test case is usually sufficient, but if its result is not satisfactory then I resort to other methods. Many patients do not care to give up the necessary time to submit to having the pupils dilated. When I make use of the retinoscope, my methods are practically the same as Dr. Fellows has outlined.

A. B. NORTON (New York): All my refraction work is done by my assistant and then verified by myself. He uses the retinoscope with the plane mirror. A very large proportion of my refraction is done under cycloplegics. A valuable point that is generally forgotten about this is the enforced rest of the accommodation for a period of ten days or so that ensues. I always use atropin and am firmly convinced that the enforced rest that it gives puts the patient in good shape.

DR. FELLOWS: Do you have to use the atropin again if you make a second examination?

DR. NORTON: It is rarely needed at subsequent examinations.

PRESIDENT WELLS: The use of atropin is not under discussion; we should keep to the subject under discussion.

Z. N. SHORT (Hot Springs, Ark.): It is my practice to use the concave mirror exclusively, but I never finally prescribe without the proof of the test lenses afterward. I rely on the test cases more than on the retinoscope and I use a cycloplegic in eighty per cent. of all my cases.

CHARLES E. WEST (Lincoln, Ill.): I work at one meter distance with a plane mirror; using a minus at one meter and deducting it of course from the finding. There is one little point that has helped me in working with children and that is to have an electric bulb that you can turn on and off; by this means you can flash the light in the eye and wake them up.

H. D. SCHENCK (Brooklyn): The retinoscope is not regularly used, my chief dependence being on the test case. I use a mydriatic much less than most of those who have discussed the subject here When it is used it is not to increase the accuracy of the test in any detail but for its therapeutic effect. I go farther than Dr. Norton. The patient is

put under daily application of atropin, with examinations every four or five days, for two weeks or longer until two tests show a concurrence in the refractive and muscular conditions. Then the effect is allowed to disappear naturally, so that it may be from fifteen to thirty days before the final test is made and glasses prescribed. Such a treatment is, of course, only possible among women who are not actively engaged in business, but those are the cases which usually demand such a treatment. The retinoscope is used to confirm the test case but not to supercede it.

E. G. LINN (Des Moines, Ia.): I use a plane mirror at one meter, adding, of course, a minus one to my findings.

I employ atropin in probably two-thirds of all cases under fifteen, in a fair proportion of those between fifteen and twenty, and in some between twenty and thirty years of age who complain still of symptoms not relieved by former fittings.

Homatropin serves me well in most cases where I desire a cycloplegic between the ages of seventeen and twenty-five and in practically all of the few cases where one is employed in patients over that age. In people over thirty or thirty-five I obtain good results with the retinoscope by having the patient voluntarily relax the accommodation.

My first work in refraction is always with the trial case and so, too, is my last, as I endeavor to reconcile any differences between the manifest and my retinoscopic findings by subsequent trial case work. I have employed the ophthalmometer at times as somewhat of an aid in fixing the axis of a correcting cylinder.

J. M. PATTERSON (Kansas City): I began by using the concave mirror; after trying the plane mirror for two or three years, I again went back to the concave mirror and have continued using it ever since. My distance is one meter. I use atropin in about forty per cent. of my cases; invariably in the young. I would like to use it oftener, but people will not stand willingly for the inconvenience and loss of time. I usually begin with the test case and follow it up with the retinoscope, then I use the ophthalmometer for information about the axis. When I use atropin I make three tests, one before, one during and one after. In all cases in which my findings with the test case and the retinoscope are different I insist upon the use of atropin so as to be sure of what I am doing.

J. H. BALL (Bay City, Mich.): I use the concave mirror at a distance of one meter; I also occasionally use the plane mirror, but I prefer concave. I depend more upon the test case than upon the retinoscope. I agree with Dr. Norton that there is a great advantage in the enforced rest of the accommodation for a week or ten days. I use it in about twenty per cent. of my cases, and would use it much more if my patients would stand for it. The results with the use of homatropin have been unsatisfactory. In the use of cycloplegics I do as Dr. Patterson does, make three tests, one before, one during and one

after. I rely rather on the results of the test case than on the retinoscope. For notwithstanding the scientific proficiency of the users of the retinoscope, the desired end is, after all, the comfort of the patient and I know of no way of obtaining this end as satisfactory as does the test case.

A woman who had been through the hands of several specialists, all of whom had found her astigmic, fell into my hands; I found the astigmia even under the use of atropin. It so nearly agreed with the glasses she was using that I kept her under the use of atropin for thirty days; at the end of that time I found that there was no astigmia at all, and she has had no trouble since. This case convinced me that cycloplegics are a necessity; and that we often do not continue them long enough to get the results that they are capable of giving.

EDGAR J. GEORGE (Chicago): Twenty years ago I attended a special course in refraction, and was there taught retinoscopy as a method for diagnosing and estimating errors of refraction. Since then I have used it in every case that I have refracted. I rely upon it implicitly. It has proven to me to be the quickest and most reliable of the known methods. Very rarely have I found it misleading, and then when some pathological change has taken place in the surface of the cornea. In the estimation of astigmia and the locating of the axis it is more accurate in many cases than the ophthalmometer. The ophthalmometer will give the measurement of the corneal curvature, but not the lenticular. I have frequently seen a corneal astigmia neutralized by the lenticular, and have seen a lenticular astigmia overrule a corneal. Then again I have found the axis different from that recorded by the ophthalmometer, due to a combined existing corneal and lenticular astigmia, the lenticular astigmia superceding the corneal at a different axis than at a right angle. Retinoscopy is a reliable method for the correction of young children, illiterates and the deaf and dumb. I use a concave mirror.

I was also taught to correct all errors of refraction of patients up to forty years of age under a strong cycloplegic, an atropin solution 4 grains to the ounce. This was done for the purpose of making a complete estimation of the total amount of the defect. I was instructed that the latent defects were as much a source of reflex disturbances as the manifest, and that the correction of the manifest was only palliative and not curative. I have found this to be true even with some cases beyond the age of forty who still suffered from eye strain. In all these years, with the exception of but a few cases, I have made my estimations and corrections under the influence of atropin. It is my custom to make several examinations, each on a separate day, instructing the patient to instill the solution into the eyes four times a day. In following this method my results have been most gratifying. 'Tis true patients complain of the inconvenience caused by the use of atropin, but what care I, nor should they, when a permanent or a long lasting result is to be obtained.

I have given homatropin and scopolamin a thorough trial and have found them unreliable. As cycloplegics their action is not sufficiently long lasting nor profound enough in their effect. In many cases they do not relax the ciliary muscle completely, besides it is rarely that an accurate correction can be made at one examination. One examination frequently confuses both the patient and examiner, therefore can not be relied upon.

In addition to the discussion of this subject, I wish to make this supplement, that after having carefully corrected a patient in order to obtain the best results it is important to have the prescription accurately filled, as there are many careless opticians. It is also important that patients be instructed how to wear their glasses and to know when the lenses become misplaced or out of alignment.

BURTON HASELTINE (Chicago): I cannot claim an experience as large as that of some of the speakers and I do not wish to appear dogmatic, but I must say that I am surprised at the uncertainty and variety of opinion expressed in this direction. The principles of retinoscopy and its place and value in refraction work are questions as nearly settled as anything pertaining to ophthalmology. If I could be as positive in my predictions and as certain of results in all other things as in my refraction work my happiness would be well nigh complete.

I use full cycloplegia in all cases under the presbyopic age. It makes no difference whether the mirror be plane or concave, except as the examiner accustoms himself to one or the other. Neither is the distance important provided it is accurately measured and allowance made upon the basis of one diopter for each meter.

I confirm my findings by subjective tests with trial case while the patient is still under cycloplegia and rarely make subsequent tests. For the first fitting in young patients I give a considerable under-correction and increase to full correction in one or two years, usually with no re-examination other than a brief subjective test.

My records show that for more than five years by following this method I have found it unnecessary to change a prescription or to do a second refraction.

My observation has led me to distrust the results of anybody's examination by any method where the eccentricities of the ciliary apparatus are not eliminated.

G. D. ARNDT (Mt. Vernon, O.): I use the retinoscope first; I have used Mr. Cross's retinoscope in most cases as it is a very quick instrument. It requires a certain technique for its use but when that is acquired it is very quick and satisfactory. Then I verify my work with the test case and determine the axis also.

I. O. DENMAN (Toledo, O.): If I were limited to one means of testing refraction I should choose the retinoscope; I like best however to take advantage of all means. As to the proportion of the strength of the lens that turns the shadow, I think that about three-quarters is a

safe proportion. If it required a plus 2 to turn the shadow, I would prescribe a plus one and a half at one meter distance. This is a safe rule but it is not absolute.

R. W. HOMAN (Webster City, Ia.): My practice is to use the retinoscope upon each case and I place more dependence upon it than upon anything else. I confirm it with other tests, of course, but it is my chief reliance. I use the fog test and test first then down with the card at fifteen feet. With all cases I put on the fog for the retinoscope and sitting at a distance of one meter work it down with concave lenses. I use cycloplegics very little, not once in a hundred cases. In retinoscopy I place the light just above and behind the patient's head, use concave mirror and deduct 1 D. from the result.

J. A. CAMPBELL (St. Louis, Mo.): Formerly my absolute rule was to use cycloplegics but I soon met plenty of cases which would not submit to the inconvenience. I am not quite prepared to take the lordly position of Dr. Norton and tell them to go elsewhere if they will not do exactly as I tell them. In my own practice I use cycloplegics less and less; I make fewer changes and am better satisfied with my work than ever before. I attribute my success to my familiarity with the retinoscope. I rely upon it almost exclusively.

One firm in our city doing an immense business refuses to use it at all. They prefer the ophthalmometer. To me the ophthalmometer is confusing, I have almost quit using it at all. I have heard it said that it makes a good impression on the patient but I despise that kind of office outfit. I use a plane mirror and have no difficulty, as a rule. I know that there is a certain class of cases in which it is necessary to paralyze the accommodation and I have had cases that it took three weeks to completely paralyze the accommodation.

A lady came to me who had great trouble with glasses and with oculists; she had worn glasses and glasses, each one worse than the other apparently. I found the state such that there was nothing to do except thoroly paralyze the accommodation. My experience has made me partial to hydrobromate of scopolamin, of course it does not last quite as long, but in all other respects I think it is about as good as atropin. On account of the more prolonged action I used atropin in this case as strong as eight grains to the ounce and found the astigmia very different from what it had been before. I was able to give her a pair of glasses that finally satisfied her.

A. E. CROSS (Worcester, Mass.): In the first place I do not like the term retinoscopy which I hear used so much, the word skiascopy describes the process much better. In regard to skiascopy, it is the most accurate method that we have. The ability to estimate accurately the state of the eye by objective signs is a necessary requisite of every specialist. We should not make the statement that we verify our skiascopic findings by the case, but the reverse. I am sorry that in a group of trained men like this, there should be any question of whether to

add or subtract in a given condition. This is a fundamental fact and not a case where we think or have a right to think about it. There is an acurate rule and there should not be any difference of opinion among us on such a point.

The fact is this: in a normal eye there is no reversal of the shadow when the reflected light is thrown into the eye. In a myopic eye of one diopter there is no shadow because that is the point of reversal, therefore we add one diopter to the total correction. The distance at which you do your skiascopy should make no difference in the results if you make the proper additions or subtractions.

My own method is to use the plane mirror at one meter distance. I use a DeZeng skiascope; the light is good and the shadow is clear and well defined. If your illumination is perfect you will have no trouble. Personally I never allow myself to see or know what the patient has been using when they come to me. As to the method of recording results, I have a record book that will answer for three different tests and if my subjective results differ from the objective ones it is shown at a glance. I want to give the results of the examination of one hundred cases which makes in all two hundred eyes:—

I had 84 cases that were under one diopter of hypermetropia; of these 24 agreed with the subjective tests, or 27 per cent.

34 varied .25, or 40 per cent.

16 varied .50, or 20 per cent.

10 varied to such an extent as to be entirely misleading, or 12 per cent.

There were 27 cases between one and two diopters; of these 16 agreed, or 60 per cent.

4 varied .25, or 15 per cent.

7 varied .50, or 25 per cent.

There were 29 cases of two diopters and up; of these 16 agreed, or 55 per cent.

9 varied .25, or 31 per cent.

4 varied .50, or 14 per cent.

There were 22 cases of mixed astigmia; of these 16 agreed, or 73 per cent.

4 varied .25, or 18 per cent.

2 varied .50, or 9 per cent.

In ten cases of myopia minus one to three, 10 agreed, or 100 per cent.

In eight cases of myopia minus three and over; 5 agreed, or 62 per cent.

2 varied .50, or 25 per cent.

1 varied 1., or 13 per cent.

There were twenty cases of myopia with mixed astigmia; of these 18 agreed, or 90 per cent.

2 varied .25, or 10 per cent.

SUMMARY.

In 200 cases 105 agreed, or 52 per cent.
53 varied .25, or 26 per cent.
32 varied .50, or 16 per cent.
10 were misleading, or 5 per cent.

The greatest variation was in the young, and all the misleading cases were in the young.

ERLE B. WOODWARD (Lincoln, Neb.): I make constant use of the retinoscope with every patient who applies to me for glasses. In all persons under the age of 30 years, the pupil is dilated with homatropin, above 30 without the mydriatic. For the first few years of my practice I attempted to make an absolutely accurate prescription and would often vary the results obtained with the trial case to meet that of the retinoscope, but in later years I have found it to be the advantage of my patient to vary the results of the retinoscope to meet the trial case. Our patients consult us that they may obtain comfort, and comfort we must give them.

I have several cases such as the following: Mrs. H.; age, 30; the retinoscope showing o. d. + 1.50, ax. 90°, o. s. + 0.50, ax. 90°. The trial lenses gave the same cylinder at a reversed sign and axis. The plus lens reduced her vision greatly but I insisted that she should wear them; after several weeks of discomfort and poor vision I changed the lenses to the minus glass, a lens which she has worn with comfort and perfect vision.

I consider the retinoscope a most valuable aid, but in the end the subjective test is final with me.

I. C. SOULE (Kansas City, Mo.): I use the plane mirror, electrically illuminated; the retinoscope that I use resembles the DeZeng instrument. I always work at one-half meter distance because the shadow is more distinct and you can make a closer estimate of your refraction. I make two diopters allowance. And depend upon this method absolutely, if other methods do not agree, I conclude that they are wrong and make them come right before I am satisfied. It has been a very satisfactory method to me.

DR. WOODWARD: Suppose you have a case like mine in which the patient can not or will not accept the lens indicated by the findings of the retinoscope and will accept something quite different, what are you going to do?

DR. SOULE: The trouble is that the doctor followed the shadow of the periphery of the lens. The shadow is no larger than one-sixteenth of an inch in diameter and it is easy to confuse the shadow at the periphery with the shadow in the visual line. Another source of error is having the patient direct the visual axis in the wrong direction. I have seen men using the retinoscope direct the patient to look past their head when the vision should be directed as nearly at the instrument

as possible. I have a little white square on the top of the instrument as a point for them to look at. That puts them very nearly in the correct visual line.

E. W. BEEBE (Milwaukee): I tried the retinoscope and the ophthalmometer when they first came out and was dissatisfied with the results; hence I gave them up.

P. G. SMOOT (Maysville, Ky.): It has been my habit to place implicit confidence upon the skiascopic examination, but I insist upon thoro dilatation of the pupil before I arrive at any conclusion. I am much in favor of the one meter distance with the plane mirror, have always found this very satisfactory. I have fitted many eyes with the trial case but have come back to the skiascope. I generally put the glasses on right away and allow the patient to wear them while under the influence of the mydriatic.

D. W. MILLER (Blackwell, Okl.): I use the skiascope in all my cases first and then afterward I use the trial case. If there is a disagreement, I go over the case on another day, and I do that often enough to make them agree by discovering where the error lies. I add one diopter in myopic conditions and subtract one in hypermetropia. The reason that we have such discrepancies is because some of us get the peripheral shadow instead of the central skiascope test. I formerly had that trouble but got over it when I looked for the central visual line.

R. S. COPELAND (New York): I add simply this, that I use the retinoscope test in every uncertain case but never until I have made a thorough test with the lenses. I think I agree with Dr. Woodward in that I think the personal factor should be considered; if I find that the scientific method does not give the patient comfort then I use something that does give the patient comfort.

GEORGE A. SHEPARD (New York): Retinoscopy has been one of my greatest aids for the last seventeen years. Altho it is unsafe to prescribe a full correction by this means alone it is possible in cases of amblyopia, irregular astigmia and in illiterates to obtain a fairly close test in apparently hopeless cases. The refractive test can be greatly facilitated by first using the shadow test. Altho a cycloplegic makes the result more certain it is not by any means always necessary; if the patient fixes the eye upon a distant object, making an effort to see clearly and keeping the visual line as close to the operator's eye as possible, the accommodation will be practically eliminated except in cases of rigid spasm. In high degrees of myopia with posterior staphyloma, owing to the irregularity of the fundus the eye must look directly at the operator; this is also true in determining the amount and axis of astigmia.

It is my habit to use the concave mirror with my ordinary light placed just back and to the side of the patient, correcting the shadow with spheres and cylinders and making my deduction with the factor 1.25 d. s.

In my hands the concave mirror, altho giving a reflex of less brilliancy, gives a better defined astigmic shadow. When the pupils are dilated the difficulty of ascertaining the exact amount of astigmia is greatly increased.

The court of last resort is always the test case. In former years I used the asbestos chimney with small aperture and worked the test out with great care, but my present precedure gives me equally good results with a considerable saving of time.

Altho retinoscopy tells us more than does ophthalmetry still it is unsafe to depend upon it entirely for the prescribing of glasses.

THE CLINICAL VALUE OF PERIMETRY.

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IN presenting a paper with the above title I wish to state, by way of introduction, that I make no pretense to expert skill or large experience in the use of the perimeter. I have no original methods to exploit or discoveries to announce. Many, perhaps most, of those present are better qualified than the writer to speak from practical experience upon the subject.

What then, it may fairly be asked, is my excuse for occupying the valuable time of the Society, and asking your attention to a paper which is nothing more than a compilation of the observation and experience of others? My reply is that it appeals to me as a very valuable aid in diagnosis that often enables one to detect slight and incipient signs of disease which otherwise might not be recognized, and to locate lesions with greater accuracy; and one which it seems to me is not as thoroughly appreciated and as generally employed as its importance warrants. Certainly I cannot recall a discussion of the subject at any of our annual gatherings, and reference to it in current ophthalmic literature is infrequent, as far as my observation extends.

Possibly one reason for this apparent neglect of an important method is that it does not aid directly in treatment, and that it requires an amount of time and patience which the busy practitioner cannot easily devote to it. Scientific accuracy, however, should be our constant endeavor, and any means to the attainment of that end is worthy of cultivation. It is then with the hope that those who do me the honor to listen to the paper may share to some degree in the pleasure and profit which the writer has enjoyed in its preparation, that I crave your indulgence.

One cannot appreciate pathological conditions without a knowledge of physiological states; hence a preliminary requisite for the successful practice of perimetry is a previous determination of central vision, the refraction and the ophthalmoscopic appearance of the fundus.

One must also be familiar with the normal limits of the visual field for form and for color. These limits it is well known vary slightly in individual cases, but the following may be accepted as the usual boundaries for form, viz.: 90° outward, 50° up and in, and 60° down. The field for blue is only about 10° less than for form, viz.: 80° out, 40-50° up and in, and 50°-55° below. That for red is next in extent, viz.: 70° out, 35° up and in, and 45° down. Lastly the limits for green are stated as 55° out, 25°-30° up, 30° in, and 30° below. The blind spot of Marriott is situated 15° outside and 3° below the point of fixation, and in emmetropes it is 5° in diameter. In hypermetropes it may be somewhat greater, and in myopes smaller. Under pathological conditions the area of the blind spot may be increased from atrophy of the elements of the retina in its immediate vicinity, as occurs in choked disc and peripapillary chorio-retinitis. The same occurs congenitally when the medullary sheath of the optic nerve fibers is continued into the retina.

Perimetry is an art to be carefully studied. Hardly of less importance than the estimation of central acuity of vision for form and color is the determination of pathological alterations in the peripheral boundaries of the various fields.

To recognize slight defects, it is necessary to use small test objects in a subdued light.

In the normal eye it makes no difference whether the field for form is determined with a dark gray object in full daylight, or a white object in subdued light. The results will be the same, either method giving the full boundaries of the normal visual field.

It is different however with colors, for the sensibility of the retina is much less for a colored than for a white object of the same size. In the peripheral zone, namely that represented by the portion outside of the forty-fifth concentric circle of the perimeter chart, all colors appear less saturated, and finally only as mixtures of white and black in varying proportions.

Hence to determine the normal boundaries of the respective color fields, it is necessary to conduct the examination under strong illumination. Because the sensibility of the retina for colors is less acute, this visual faculty is often the first to be affected and central color vision is lost in the order of the extent of the respective visual fields: green, which has the smallest area, disappears first, then red, to be followed by yellow and blue.

The relation of the limits of colors to the limit of the field of vision for white is of the greatest importance, inasmuch as the limit of vision for colors recedes from the limit of the field of vision for white in the order of blue, red and green, under pathological conditions. The distance between the limit for blue and that for white becomes greater, and the size of all color fields becomes smaller. The relation of the color limits can be compared with the extreme limit of the field of vision for white only when the latter has been determined with an object of the darkest gray, which in full daylight is still distinguished as bright; until the limit of the normal visual field is reached.

There are three different pathological states where the determination of the field of vision in full daylight shows normal or almost normal limits for white, and a great reduction in its limits for colors.

1. Idiopathic hemeralopia.
2. Early stages of progressive atrophy of the optic nerve.
3. Purely functional nervous disturbances.

The first pathological alteration in the visual field to be noted is the presence of one or more scotomata, and it is important to distinguish between positive and negative scotomata. The former are subjective, and appear as black spots before the eye. The latter are simply gaps, or blank spaces where vision is absent, and are usually only determined by perimetric examination, though a negative may also be a positive scotoma. We also distinguish between absolute and relative scotomata according as vision is entirely or only partially destroyed.

Positive scotomata are caused by intra-ocular lesions, either in the refractive media or the retina, as opacities in the lens or vitreous and hæmorrhages or exudations in the inner layers of the retina. Negative scotomata indicate an interruption of the light conducting—rather than the perceptive—elements, such as occur in affections of the choroid and outer layers of the retina and in those of the optic nerve. The significance of these scotomata will be considered later.

"Von Graefe first drew attention to the fact that for many intra-ocular diseases there are special varieties of contraction of the field, and that their detection is useful in diagnosis."

Concentric contraction with good central vision and good color vision is very characteristic of retinitis pigmentosa and it is said to be the only disease of the retina which produces a typical field. Before the rods and cones are destroyed there is considerable contraction of the field by diminishing illumination.

Perimetry is of importance in detachment of the retina, as a means of determining the degree of loss of function in the involved portion, which may retain its function for some time. Thus the apparent size of the separation is not always represented by a similar sized defect in the field of vision. It is also valuable in making a prognosis. If the limits of the field for color extend quite up to the edge of the detachment (the outlines of which have been previously determined by the perimeter) it is a favorable indication. On the contrary, if the color sense is defective at some distance from the detachment, further separation is to be feared.

A ring scotoma is most frequently associated with specific chorioretinitis.

In disseminate choroiditis, we find large insular scotomata scattered over the field, sometimes giving it a cribriform appearance—the so-called "visus reticulatus."

In glaucoma the contraction is usually more pronounced on the nasal side, and the contraction for colors develops in the same ratio as for form. The color sense is retained in the preserved portions of the field. This is an important point in the differential diagnosis between glaucoma and atrophy of the optic nerve, where a rapid diminution of the color sense is characteristic. Cases of simple glaucoma with pallor of the nerve present many points of resemblance to simple atrophy of the nerve with unusually deep cupping of the disc.

In choked disc and papilloretinitis, the field is in marked contrast to the ophthalmoscopic appearance. As long as simple edema exists, the conductivity of the nerve fibers suffers but little, and it is but slightly disturbed where infiltration and hyperæmia develop slowly, because the fibers are gradually pushed to one side and become adapted to their new positions. Normal vision has been known to have been preserved for a year with a high degree of pressure. Increase in the size of the blind spot is an early symptom, caused by pushing aside of the retina around the papilla by socalled neurotic swelling. As the disease slowly progresses there is a gradual but progressive contraction of the field, accompanied with angular or sector shaped defects, and with characteristic retraction of the boundaries of color perception from the edge of the field. With rapid development of choked disc, the visual symptoms are more rapid and pronounced. The field becomes continually lessened, central vision fails and color perception

is gradually lost until complete blindness develops. There is a typical disappearance of color from the visual field; green goes first, then red, and lastly blue.

In progressive atrophy of the optic nerve, whether idiopathic or in connection with spinal nerve affections—tabes, dementia, etc.—the diminution of the fields for white and color bear a regular relation to each other, which is of the greatest importance in diagnosis. The color fields may be diminished before any contraction for white is noticed, and they fade in regular sequence as under physiological conditions. The rule may be stated that in all cases of simple progressive atrophy the relation of the extent of the field for white to that for colors, when examined with equal sized objects, corresponds exactly to the diminution of such fields in a normal eye when examined with diminished illumination. The affection is always bilateral. The relation of the loss of central vision to the defects of the field is not constant.

A central scotoma is very seldom found in primary atrophy of the nerve, but is characteristic of retrobulbar neuritis. When due to intoxication it is almost invariably binocular; of one hundred and thirty-eight cases reported, one hudred and thirty-seven were binocular. When inflammatory, it may be monocular.

Toxic amblyopia develops first as a relative scotoma for red and green between the fixation point and the blind spot. It is best detected by using colored test objects 5 mm. square. The red objects at first appear grayish or possibly yellowish. White seems "less clear white." The scotoma gradually increases and joins the blind spot and assumes a horizontal oval shape. The scotoma is rarely absolute, and in uncomplicated cases the margins of the field remain normal throughout the disease. The hereditary and inflammatory types of retrobulbar neuritis present features very similar to the above, but there is usually a large absolute central scotoma, and the oval shape is probably less characteristic. Moreover, recovery is rare in the latter, while there is generally more or less complete recovery in toxic amblyopia.

Temporal hemianopic scotoma differs from the toxic form of bulbar neuritis in that in the former the scotoma always extends *to* the fixation point, while in the latter, it extends inwards *over* the fixation point slightly in all meridians.

A central relative scotoma occurs frequently in the course of multi-

ple sclerosis. It is often sudden in its onset and of transient duration. It is seldom absolute, but usually for green and red. The boundaries of the field may or may not remain normal. One or both eyes may be affected. Multiple sclerosis also presents at times concentric irregular diminution of the field, such as occurs in tabes.

Affections of the chiasm produce varied and interesting field defects, which are readily understood when one recalls the anatomical course of the optic nerve fibers.

Temporal hemianopsia is pathognomonic of a central lesion of the chiasm, affecting the crossed bundles of fibers. It is observed only in organic lesions or in transient disturbances resulting from organic changes; that is, it is never caused by a purely functional disease.

If one lateral half of the chiasm is destroyed, there ensues complete blindness of the corresponding eye and temporal hemianopsia of the other. Such a condition may develop in three ways:

First it may commence as typical temporal hemianopsia, as from a tumor pressing on the center of the chiasm and spreading to one side and finally destroying the uncrossed bundle of the eye on the same side.

Second. A lesion of one optic tract with resulting homonymous hemianopsia may spread to the corresponding half of the chiasm, destroying the crossed fibers of the corresponding eye. Supposing the right tract to be primarily involved, we would have left homonymous hemianopsia followed by total blindness of the right eye.

Or thirdly, the disease may commence in the optic nerve of one eye and extending backward involve the crossed bundles of the other eye. In such a case we would have first, blindness of one eye followed by temporal hemianopsia of the other.

Cases similar to the foregoing have all been described, and the lesions causing them have been verified by autopsy.

A one sided nasal hemianopsia may be caused by a lesion involving one lateral angle of the chiasm. Blindness of one eye with nasal hemianopsia in the other cannot be caused by a single lesion. Such a case was described where the whole chiasm was involved by a gummatous inflammation, and also one tract, the crossed bundles of which remained intact.

It is readily understood that the fields of vision in lesions of the tract may change rapidly with the extension or retrogression of the primary disease and hence a comparison of fields taken at stated periods affords valuable information as to the progress of the affection.

Homonymous hemianopsia is pathognomonic of a lesion affecting the fibers of one tract behind the chiasm up to and including the visual centers in the calcarine fissure, but the field alone affords no definite information as to the exact location of the lesion. Accompanying symptoms afford much aid however. It may be confidently stated that such a condition never occurs in purely functional diseases such as hysteria and neurasthenia, but it may be added to a case of hysteria. In such an event we would have hemianopic defects in addition to concentric diminution of the remaining portions of the field. A fugitive hemianopsia due to transient pressure is sometimes met in permanent aphasia and hemiplegia.

Typical homonymous hemianopsia is always absolute. If only a portion of the tract is rendered inactive, we have partial hemianopic defects.

The limit of this paper would be unduly extended should a discussion of a differential diagnosis of the location of a lesion, causing hemianopsia, along the course of the optic nerve fibers between the optic tract and the cerebral hemispheres be considered. Concomitant symptoms would alone determine the seat of such a lesion.

When the hemianopsia is of slow development a disease of the tract is probable, while a sudden onset suggest an intraocular hæmorrhage or embolism as the cause. Incongruous fields occur in circumscribed cortical lesions. "Individual differences in the organization of the optic center in regard to the situation of cortical sensory units of the fasciculus non cruciatus and fasciculus cruciatus, which relation has been described as a mixture of the small fiber bundle fields, offers the only solution of such relationship."

When hemianopsia depends upon a cortical lesion secondary atrophy does not, as a rule, extend to the papilla, and even in lesions of the tract it is a long time before degenerative changes are manifested at the disc, so that a normal ophthalmoscopic picture is the rule in homonymous hemianopsia.

In uncomplicated cases central vision is normal, but it should be remembered that they occur most frequently in elderly people in whom central acuity of vision is apt to be somewhat diminished. In aged patients also a deficient nutrition of the brain may cause irregular shrinkage of the retained halves of vision.

With patients having sensory aphasia, or who are semiconscious, the

examination may be conducted with a lighted candle, watching to see whether the eyes follow movements of the light. Care must be exercised not to bring the candle so near that a sensation of heat is perceived. The blinking reflex is also sometimes of value in arriving at a diagnosis.

Hemianopsia is seldom seen in young children. With them the test may be conducted by making them gaze at an object held in front of the eye, while another is approached from the side. In uncomplicated homonymous hemianopsia the line of separation goes through the fixation point and the boundaries of color vision coincide exactly with the limits for form.

Diseases of the visual center in the occipital cortex may occur with no other symptoms. A partial destruction may produce incomplete hemianopsia. Color hemianopsia has been known after apoplexy without hemianopsia for form.

Functional nervous disturbances produce two groups of visual symptoms:—A. General concentric shrinkage of the field. B. Symptoms of weariness in the field. The field may be reduced to the fifth degree. The contraction is uniform, not indented or sector shaped, as occurs in affections of the optic nerve. There is a relative diminution of the color limits. B. is very characteristic. There is a rapid tiring of the field so that its limits may vary during a single examination, if somewhat prolonged, and its outlines often vary from day to day. Another peculiar symptom is that the sense of orientation is preserved even with marked contraction of the field.

This paper is designed to be merely suggestive, and I have endeavored to mention briefly only the more important diagnostic points suggested by perimetry. I hope these points may be elaborated in the discussion, and that others not referred to may be suggested. As already mentioned, the paper is merely a compilation of the recorded experience of others, and I have thought it unncessary to use quotation marks or to mention authorities consulted.

43 Broadway.

DISCUSSION.

CHARLES H. HELFRICH (New York): I confess I do not make as many perimetric examinations as I should, although I firmly believe it is a field in which the most important discoveries will eventually re-

sult. One's chance to make himself famous is greater in this direction than in any other department of eye work. My sins of omission are less frequent since I have secured more conveniences to carry out the examinations. These conveniences do not consist of the more expensive self-recording instruments but the ordinary Schweizzer instrument which the patient holds himself and is instantly adjusted to the proper height without the usual fussing. Another cheap and most convenient test is Oliver's modification of Abney's pellet test for central scotomata manufactured by Wall & Ochs.

How often do we fail to test patients who ask "Is smoking injuring my eyes?" If their vision is normal we always fail. Since securing the pellet test I never fail to use it at such times and have been rewarded by finding several with central color scotoma despite normal visual acuity.

I would like to report an interesting perimetric finding which occurred i a young man with a high degree of myopia but normal visual acuity. About two years ago he had an attack of vertigo and following this he noticed a positive scotoma in the upper part of the field. With the perimeter I found a scotoma for white ad colors which existed only at axis 90° from 0 up to 10°. Nothing was found then or since with the ophthalmoscope. This condition is still present and unchanged. The patient neither drinks nor smokes. Mainly from the fact that he has had occasional attacks of teichopsia I have attributed the trouble to some disturbance of the circulation in the visual area.

A STUDY OF LARYNGEAL TUBERCULOSIS.

GEORGE B. RICE, M. D.,

Boston, Mass.

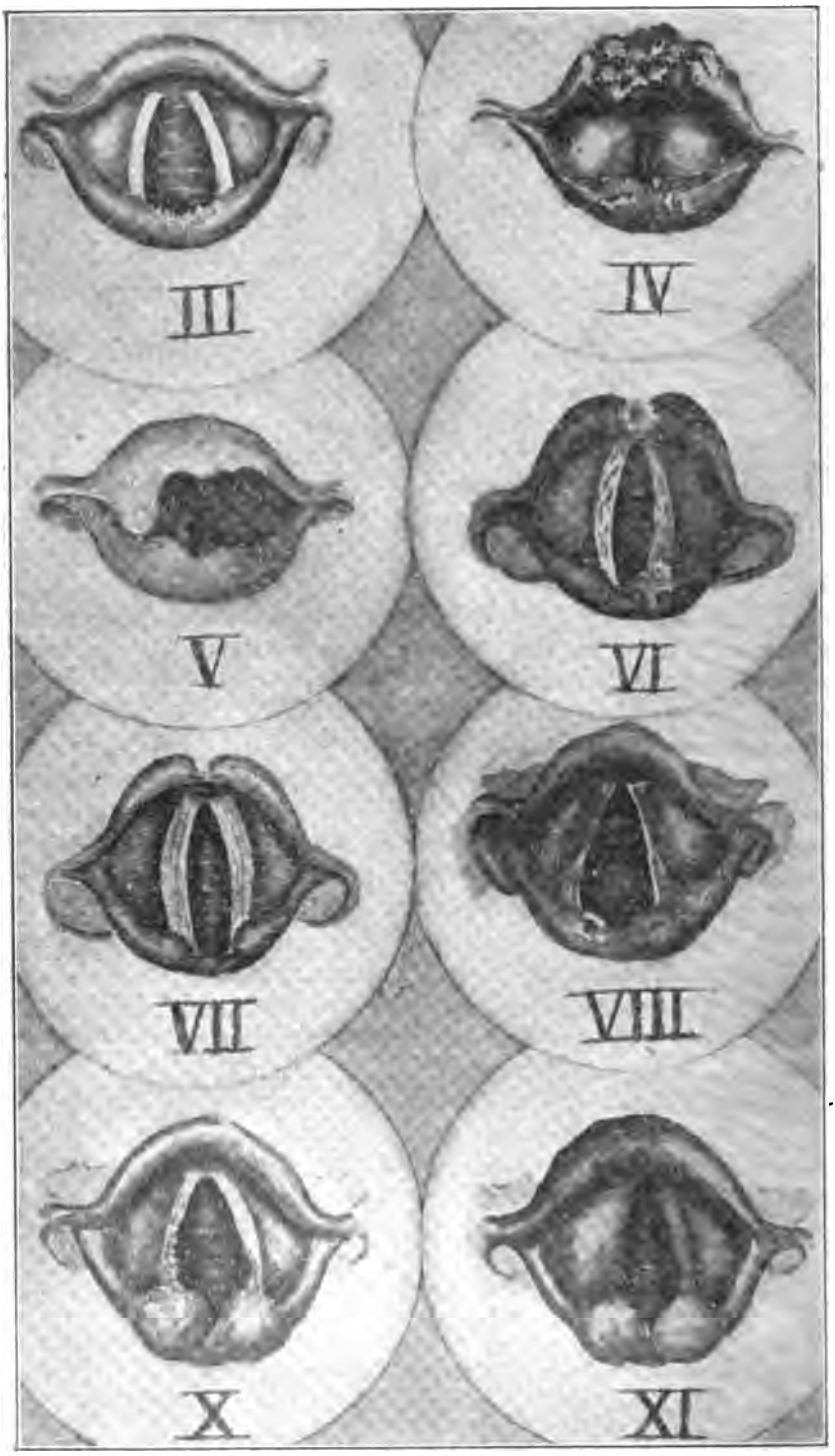
THRU the courtesy of many New England physicians, and particularly those who are connected with public and private sanitaria, it has been the privilege of the writer to see quite a large number of cases of laryngeal tuberculosis and to watch their recovery or dissolution from time to time.

Most authorities agree that laryngeal tuberculosis is only in rare instances a primary infection. If we admit this, together with the fact that laryngeal tuberculosis occurs in only about 30 per cent. of those cases afflicted with the pulmonary form, we are forced to believe that the larynx in its normal state has remarkable immunity. The so-called pretuberculosis lesion is a state of lessened immunity which it is rather difficult to describe or to demonstrate, but which the writer believes can frequently be detected in two forms with individual variations: inflammatory and anemic. Figures 1 and 2* represent these types of disturbance.

Figure 1 was from a patient in the second stage of pulmonary tuberculosis and shows a chronic laryngeal inflammation, probably caused by inflammation and obstruction in the nose and nasopharynx. There is a little tumefaction in the posterior commissure and over the arytenoids. The movement of the vocal bands is sluggish and the voice husky, but the general condition of the patient is good. By the use of mild local measures a few weeks' treatment effected the complete disappearance of the local symptoms.

Figure 2 is that of a patient with a third stage tuberculosis of the left lung. This condition had existed for a long time with sudden active exacerbations; it was during one of these active periods that the case was first seen by the writer. The larynx was anemic with infiltration in the posterior commissure. The condition improved under

*Note by the Editor.—Of the twelve water colors exhibited to the O. and O. Society in illustration of this valuable paper, it was found impossible to reproduce adequately numbers 1, 2, 9 and 12 in a black and white halftone because these had too much yellow in their coloring.



A Study of Laryngeal Tuberculosis.

stimulating applications of iodine, carbolic acid and glycerine, followed by applications of ½ per cent. formol.

Case 3 is interesting from the fact that an examination of the larynx led to the discovery of an obscure pulmonary lesion. The patient was sent by a vocal teacher, who wrote that the singing voice was impaired and that he had noticed this for about three months. An examination of the larynx showed the condition to be as in Figure 3. It will be seen that there is a general pallor of all the tissues and that at the posterior commissure there is a superficial ulcerative area. An examination of the chest revealed a suspicious spot in the infrascapular region on the right side, and it was discovered that the patient was running a daily afternoon temperature of 100° to 101°. She was sent to the Rutland Sanitarium, where she is receiving the usual open air treatment, with a good prospect of speedy recovery.

Case 4 illustrates what an extensive destructive process can take place in the larynx with complete recovery. This patient was brought to the office by her physician because of a cough, emaciation, and difficulty in respiration. An examination of the larynx showed a condition illustrated in Figure 4. The right lung was found to be in the second stage of involvement. With the co-operation of her physician the patient was sent to Dr. Butler's private sanitarium in Rutland. It was hoped that the local laryngeal treatment, combined with the out of door life, would make a tracheotomy unnecessary. A few weeks later, however, Dr. Butler brought the patient to the hospital and a tracheotomy was performed by the writer late on the night of June 11, 1906. She made a good recovery from the operation, left the hospital in ten days, and returned to the sanitarium still wearing the tube. Two weeks later, under a local anesthetic, a small amount of tuberculous tissue was removed from the posterior commissure. July 11th the larynx had improved to such an extent that the tracheotomy tube was removed. July 28th the patient reported again at the office, and a marked change for the worse in the laryngeal swelling was noticed; this gradually progressed so that on September 1st a second tracheotomy was performed. The patient's cough had now increased, she had lost some weight and was quite weak, showing also slight afternoon temperature. After this operation the larynx again improved rapidly. In the first six weeks there was a gain of six pounds in weight, and all other symptoms were correspondingly better. October 30th a considerable amount of tubercular tissue was removed, and the

patient continued to improve. She left the sanitarium and returned home in very good health, and married a second husband. In a few months, thru inattention to hygienic and open air methods of living, the swelling and contraction of the larynx returned to a considerable extent. The tube was again inserted and is worn by the patient at the present time. The larynx presents the condition shown in Figure 5. The glottic space is closed by the contraction of cicatricial tissue. The patient has no cough, and her physical condition is good.

The argyrol-formol treatment was mentioned in connection with this case. The writer believes that for inflammatory conditions, whether tubercular or nontubercular, a direct application of argyrol to the affected parts, by means of a cotton swab, is more beneficial than any other local treatment. It should be applied often, and the patient should be taught how to use the laryngeal applicator that there may be no interruption in the treatment. Some patients learn to use the swab easily, others require special instruction; it is believed that every adult patient can be taught to make the application effectively.

Formol was first used by the writer ten years ago in the dispensary clinics, where a considerable number of tuberculous cases were seen. So far as is known, these experiments with formol originated with the writer. It is now used by many laryngologists alone or in combination with other medicaments. Knight, for instance, recommends Lake's formula: formol, 7 per cent.; lactic acid, 50 per cent.; glycerine, 20 per cent.; water, 100 per cent. It is also used incorporated in powder under the name of paraform. Formol is most useful in the pale, tumefied conditions, either before or after ulceration has begun. At first applications are exceedingly painful, but the larynx soon becomes tolerant and applications as strong as 2 per cent. to per cent. may be used freely. Ballenger in his recent work says that Gallagher, Levy, Lockhard, and Johnson make local applications of formol to the larynx with beneficial results, and that Gallagher was the first to prove its beneficial action in tuberculosis of the larynx. Injections of guaiacol into the tumefied tissues have been recommended by various specialists. Ballenger believes that the leucodescent light is beneficial, particularly when the patient suffers from pain. Lactic acid, iodoform and ether, and silver nitrate have all been disappointing in the experience of the writer.

Many of you present will remember the routine methods of treat-

ment as carried on in a certain clinic in Vienna. After the examination had been made all laryngeal, tuberculous, catarrhal, malignant, and neurotic cases lined up before the assistant and received swab application of silver nitrate after hours of waiting and after undergoing repeated examinations by inexperienced students and submitting to repeated demonstrations by the professor.

Figure 6 is an illustration of the larynx of Miss E., who consulted the writer November 9, 1905, thru the courtesy of her physician; she was in the second stage of pulmonary tuberculosis. Her physician had been treating her throat with the formol solution, and had found it so unusually tolerant that he had been enabled to use it as strong as 7 per cent. He stated that marked improvement had taken place in the laryngeal condition. A continuation of the treatment was, of course, advised. A second examination on March 9, 1906, showed that the larynx had completely healed, leaving a notch in the epiglottis and a projection on the left side of the posterior commissure. The patient left the sanitarium the following autumn and was seen by the writer at intervals; at the last examination, May 4, 1908, the larynx presented the appearance shown in Figure 7. The patient used the swab herself daily for a year, alternating between argyrol 20 per cent. and formol 5 per cent., according to the condition present. She is now entirely cured of her laryngeal and pulmonary lesions.

It has been asserted by some observers that the invasion of the larynx by the tubercular bacilli is an indication of an increase in the pulmonary lesion, and if improvement takes place in the laryngeal disease that this is due in a great measure to the fact that the lungs have also improved.

The writer is sure that in some instances this statement can be contradicted by all who have had an opportunity for observing a large number of patients suffering from both forms of tubercular disease. He has repeatedly seen the laryngeal condition improve from proper treatment in hopeless pulmonary cases. He has also seen patients suffering from laryngeal tuberculosis grow gradually worse when the pulmonary state was apparently unchanged, or even improved.

The case of Mrs. W. will illustrate this point. She was sent from a sanitarium for a diagnosis of the laryngeal condition on December 23, 1905. Her physician wrote that she had been under his care for about five months. Pulmonary tuberculosis was well advanced, and hoarse-

ness and pain in swallowing had been noticed for some weeks. The condition was as shown in Figure 8. A diagnosis of laryngeal tuberculosis was made, and the case was not seen again until the following May. She then said that she had been advised to return to her home, and to put herself under the writer's care. Her physician wrote that the pulmonary condition was worse, and that the prognosis was unfavorable. The larynx at the second examination was considerably more involved than before. Argyrol treatment was begun at once, and the patient received her first lesson in making the application. I saw her once a week for a time, and as soon as the inflammation had subsided began the use of a weak formol solution every other day. The pulmonary condition progressed very slowly, but the larynx improved steadily, and in December, 1906, was practically well, as shown in Fgure 9; it remained so until her death from a complication of troubles —probably tuberculous—about eight months later.

Case 7 is of a young man twenty-two years of age, who was discharged from a sanitarium because of a secondary laryngeal infection. His general condition was fair, but he was suffering from deficient nutrition, occasioned by his reluctance to take a sufficient amount of nourishment because of the pain from swallowing. One lung onlv was tuberculous, and this not advanced. The larynx, however, presented the appearance as shown in Figure 10. It will be seen that the arytenoids are greatly tumefied, the right vocal band ulcerated, and the right ventricular band inflamed. Everything in the writer's power was done to make swallowing less painful, to improve nutrition, and to control the ulcerative process, but the larynx grew rapidly worse, and swallowing more difficult. Tracheotomy was strongly advised but the patient would not consent. Soon after this he stopped treatment, and died about two months later. Figure 11 shows the appearance of his larynx about the time of his last visit.

Figure 12 is shown because of the left sided involvement of the tubercular disease, and because of the conversion of the right ventricular band into a mass of grey, necrotic tissue. The case was one of advanced pulmonary tuberculosis with much emaciation and weakness. Only palliative treatment was advised.

If this paper leads some of the members of this society to experiment with the argyrol-formol treatment, and to report results, the object will be attained and the author will feel himself more than repaid.

220 Clarendon Street.

DISCUSSION.

RICHARD H. STREET (Chicago): The subject of the so-called "pre-tuberculous" lesion is one that deserves attention, for at that time in the disease our cases are most amenable to treatment. Patients should not be allowed to go with a chronic hoarseness thinking that "it is only a cold" for it is of great significance, meaning one of four things: tuberculosis, syphilis, neoplasm—benign or malignant—or chronic laryngitis, including singer's nodule. It is not necessary to have an elevation of temperature at this stage of the disease; it may be and often is subnormal in the early part of the day, rising to normal in the afternoon. In suspicious cases the temperature should be watched most carefully, having it taken in the morning before the patient arises and at stated intervals during the day. By this and other clinical symptoms we can make our diagnosis early enough to get brilliant results. The essayist is to be congratulated upon his success in the treatment of this most dreaded disease, as his average of recovery is far above those of other writers.

I hope that in closing the discussion Dr. Rice will go into the technique of his treatment as to the special indications for the drugs mentioned, his method of using them, and how he instructs his patients for the carrying on of home treatment.

J. G. SHALLCROSS (Philadelphia): Perhaps no subject is engrossing the attention of the medical fraternity more than tuberculosis at the present time.

Dr. Rice says in his excellent paper that about 30 per cent. of all cases of pulmonary tuberculosis present evidence of laryngeal involvement, and calls attention to the remarkable immunity of the larynx under the circumstances; add to this the fact that we so frequently find the greatest laryngeal involvement corresponding to the side of most pronounced pulmonary change and we have a fairly good confirmation of the opinion that infection of the larynx is more often through the lymphatic system than from direct contact of the mucous membrane with infectious expectoration from the lung.

Dr. Rice calls particular attention to the use of formol. Some four years ago my attention was called to the use of the formalin preparation and I made a careful study of the drug, and concluded that it should be a valuable addition to our armamentarium in treating the condition under discussion. I found that experiments proved that formalin 1 to 100,000 prevented the development of the bacillus, and that 1 to 70,000 killed the germ. Add to this the deep action of the drug and it would seem that we had found a most valuable local germicide and remedy in the treatment of this phase of the white plague. In using any preparation containing formalin I have always acted cautiously, remembering its hardening action upon the tissue. My ex-

perience with the drug has been highly satisfactory; with its use I have seen beginning infiltration checked, and pathological conditions disappear.

Argyrol, kreosote, chloride of zinc, and iodine, I have used with varying results. Nitrate of silver I have never used. My main dependence has been upon the lactic acid solution, and iodoform in ether, and with these preparations I have seen tubercular ulcers heal in a few cases and in many cases I have had decided improvement. This treatment is, however, only indicated after the ulcerative stage has been established; before that time, during the stage of infiltration, I believe the use of formol indicated and offering us our best hopes.

The leucodescent light has been referred to, I have had no experience with it, but I would like to say that I have seen marked improvement from the use of the Roentgen rays.

I consider the open air treatment, with proper sanitation and forced diet indispensable.

EPITHELIOMA OF THE LOWER EYELIDS, THREE CASES, REMOVED BY A MODIFICATION OF DIFFENBACH'S METHOD.

E. W. BEEBE, M. D.,

Milwaukee, Wis.

IT is probable that but little can be said regarding the etiology, diagnosis, or treatment of epithelioma, which has not been threshed over time and again at our gatherings, but it is an acknowledged fact that in the course of human events a certain number of our friends and neighbors will become afflicted with these undesirable growths and that we may be prepared to treat them as successfully as possible, it behooves us to frequently discuss and study the subject, from varied view points, whenever conditions present themselves.

The fact that three patients having epithelioma of the lower eyelids came under my care in a period of ten days in the month of June last, is additional proof that while these growths are somewhat rare, and not of every day occurrence, any one of us is liable to run up against them more or less frequently and perhaps when least expected.

These cases were alike in character and location, involving the greater portion of the lower eyelids and situated at the lid margins. They were removed by the knife practically in the same way, the blepharoplastic operations for the restoration of the lids being a modification of Burow's or Diffenbach's method, a discussion of which perhaps will be of more interest to the members of the society than other portions of this paper.

Neither of the tumors have shown signs of recurrence up to the present time, and I think we may claim a cure in each of the cases reported.

A few x-ray treatments were given two of these patients after removal of the growths, but whether useful in preventing return of them I am not prepared to say.

When it is remembered that, like most other cancerous conditions, this disease is usually fatal when left to itself or when treated by

plasters, caustics, etc., or when removal is delayed till the glandular system has become involved, I feel that the early use of the knife should be impressed upon those who are in a position to meet these cases frequently, but who are perhaps inclined to make light of them, or advise delay in their removal.

In the light of advanced therapeutics my convictions are that the only efficient treatment known to the profession today is removal by excision.

What the future has in store for us when our friends of the other school shall have perfected the opsonic treatment of these cases I have no means of knowing, but up to the present time it is quite evident that medicinal treatment is of little avail in curing or preventing progress of these growths. I believe it is also conceded that the much lauded x-ray treatment has failed to be of the service expected when first brought to our notice; that it has proven to be of no service in all cases I am not prepared to say, but we think we do know that surgery when promptly and wisely used promises better results than any other known remedy in this much dreaded disease.

For practical purposes it is unnecessary to make a positive or differential diagnosis of these growths, for whether they prove to be rodent ulcers, epitheliomas, or sarcomas, the treatment must be the same; and whenever we discover a growth wherever located in persons beyond middle age, beginning like a wart, nodule, or fissure, attended by slight itching, with but little pain, but which in time progresses and becomes ulcerated, having indurated, everted, or undermined edges, we should I believe advise removal by the knife without delay.

A microscopic examination by an expert I believe is the only positive method of making a diagnosis of carcinomatous disease, and when suspected such examination should be made by one competent to do so.

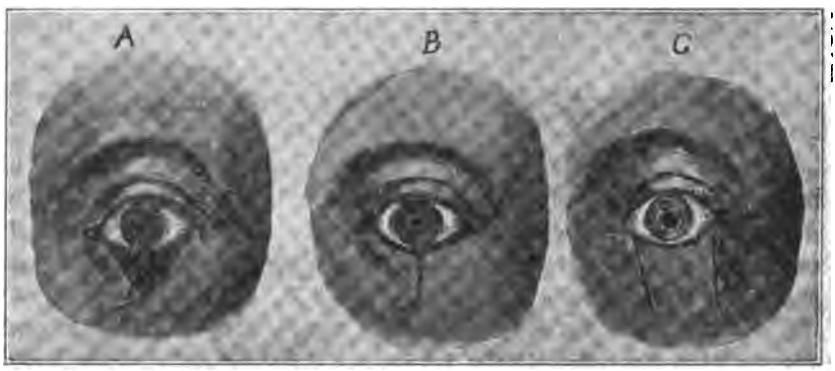
Epithelioma may usually be differentiated from rodent ulcers, by the fact that it is commonly found at the junction of the skin and mucous membrane, while rodent ulcers are more often located some little distance from the edge of the eyelids, when confined to this portion of the face; both have however the same characteristic cell formation when examined under the microscope.

Operations for epithelioma are therefore usually more difficult of accomplishment than are those for rodent ulcer, by reason of the

necessity for blepharoplastic operations for the restoration of the parts after the removal of the cancerous growths.

Two of the cases before mentioned occurred in blacksmiths of 50 and 55 years of age respectively, and both were caused by repeated burns from hot cinders; the third case was in a middle aged woman, a housekeeper much enfeebled in health, the growth presenting a much more malignant appearance than in either of the others, it being of several years standing and much larger in size, involving more than the entire lower eyelid, but nothing was known of its possible origin.

The method of operating in these cases was by incisions through the skin from the outer and inner canthi downwards in a V shape to a



Epithelioma of the Lower Eyelids, Three Cases, Removed by a Modification of Diffenbach's Method.

point about three-fourths of an inch below the median line (represented by the letters A, B and D, in the accompanying drawing), the dissection being made from below upwards and sufficiently deep to be certain that no diseased tissues were left in the wound; this method of beginning the dissection below and working upwards greatly assisted in saving the palpebral conjunctiva so necessary to be preserved for the lining of the reconstructed eyelids, in fact it would have been well nigh impossible to have done so by beginning the dissection at the lid margin.

The next step consisted in the removal of a three cornered piece of skin at the outer canthus (see D, E, F, figure A), the base of which extended horizontally from the canthus outward an inch or more, the apex being above at about the same distance, the skin being under-

mined or loosened from the outer portion of the wound for half an inch or more between E and F, also between B, D and F, and A, B, C.

The apex of the nasal flap, made by extending incision from B to C, was brought up to the lid margin and united to D by strong sutures, both flaps being stitched to the conjunctiva, thus forming a new lid, after which the other wounds were sutured and the patient put in bed with light dressings over all.

This it will be observed is a modification of the old method more commonly resorted to where a long flap is made at the outer canthus, as shown in figure C, and which depends entirely upon its blood supply from a narrow base, it being slid into place after dissection, but which lacks the necessary width to allow for shrinkage, beside leaving an open wound to granulate, which is often followed by undesirable scar tissue, undue stretching, and displacement of the canthus.

Norris and Oliver in their commendable work have this to say of this operation:—"The displacement of the canthus and stretching of the new lid by the cicatrization of the large space left to granulate in its usual position are the most serious drawbacks to the operation."

They suggest modifications for improvement of the method, but all leave more or less open wounds to granulate, thereby resulting in greater or less deformity.

When the operation is completed as above described, the wound presents an appearance similar to figure B, and in each of the cases healed readily without suppuration and with but little deformity.

The desirable requisites of a plastic operation to secure flaps of ample size to cover the wound without tension, and to obtain them from a locality having an abundant blood supply, the direction of which bloodvessels shall be from the base towards the apex of the flap, by these means we are assured of a prompt union of the coapted parts, while in the opposite case sloughing and nonunion of the flaps are not infrequent.

In the cases reported these conditions were well provided for, the securing of the flap from the side of the nose being apparently an improvement over Diffenbach's sliding flap so commonly resorted to in the restoration of the lids after removal of the cancerous or other growths of the lower eyelids.

Experience obtained from these operations leads me to believe that the base of the triangle at the temple should not be horizontal but

rather somewhat upwards from the canthus outwards—this I believe would prevent a slight ectropium noticed more particularly in the case of the above mentioned.

173 Wisconsin Street.

DISCUSSION.

R. I. LLOYD (Brooklyn): Plastic surgery reminds one of Dickens's book, Great Expectations. Two ideas should be ever present while engaged in this most difficult branch of surgery:—We should endeavor to provide an abundant blood supply, and we should endeavor to avoid all tension on the flaps. The first amputation of a limb one performs demonstrates most forcibly the necessity of the last provision, and we are at the same time surprised to find how loose the flaps are just after the operation and how rapidly the skin retracts afterward. The first suggestion requires no argument in its favor.

After the operation is over, the patient carefully bandaged and placed in bed, we go away and leave the villain in the play, cicatricial contraction, to do his worst. Dr. Beebe should be congratulated because the odds are decidedly against success in these cases.

C. GURNEE FELLOWS (Chicago): How long ago was the operation? Has there been any recurrence?

DR. BEEBE: The operation was last July; there has been no recurrence since

G. D. ARNDT (Mt. Vernon, O.): I can report a case, which it would be premature to call a cure, in which the x-ray has proved to be indispensable. I have removed it twice by cutting it off and saving what tissue I could. The second time I had it examined and the report came back that it was carcinoma. I then used the x-ray, exposing it at two inches distance for five minutes, a leather pad intervening. I did this for a week. At the time of beginning these treatments there was decided engorgement at the inner angle of the eye and there was severe dermatitis; the pain would be relieved by each treatment but recurred again at the end of twelve hours. Every bit of infiltration and thickened tissue was absorbed away. That is a year ago; there has been no apparent disposition to return. It is too early to call it a cure, but it looks very favorable. The technique of the treatments should be very exact and accurate. The intelligent use of the x-ray in these cases is invaluable; I have had other cases equally successful.

N. D. SCHENCK (Brooklyn-New York): Was radium in any form used at all?

DR. ARNDT: No, sir; not at all.

DR. SCHENCK: Dr. W. H. Dieffenbach gave this society a carefully prepared paper upon the results of work that he had been doing with radium pencils upon such growths as these. He had been carrying on

his experiments for several years. He claimed that it had a marked effect upon this kind of tissue and the growth was less likely to recur than after removal by surgical means; the likelihood of recurrence was lessened and if there was recurrence the length of time of freedom from it was greatly prolonged.

PRESIDENT WELLS: I can add my testimony to the fact that the straight D operation is a failure. That nasal flap is an improvement. Did the conjunctiva regenerate on the flap? I took a flap down from each side in a case that I had and was gratified to see the conjunctiva regenerate.

DR. BEEBE: The results of the operation were very gratifying in that respect; the conjunctiva was almost normal in appearance afterwards. I expected to have a notch in the lower lid but was agreeably disappointed. The conjunctiva seemed to be sufficient to obviate that. If you try this idea be sure that the base of the triangle at the temple is not horizontal but runs somewhat upwards. This side of the triangle is made by an incision from the canthus outward and upward.

NERVOUS INSTABILITY A CAUSE OF OCULAR INCOORDINATION.

FRANK C. RICHARDSON, M. D.,

Boston, Mass.

SINCE the publication of the claims of Stevens and Ranney and their followers, the importance of eyestrain of various kinds as a factor in the production of neuroses, organic as well as functional, has received much attention. Voluminous statistics, more or less trustworthy, have been compiled, testifying to the relief of nervous conditions, varying from headache to epilepsy, by the correction of muscular anomalies and refraction errors.

Notwithstanding the often extravagant claims of the ophthalmologists, and the sometimes unreasoning skepticism on the part of the neurologists, the latter specialists have long since recognized that in no case of functional nervous disease has the examination been complete until a systematic and thorough ocular investigation has been made.

Eyestrain accompanying neurosis is of such frequent occurrence as to have become accepted as almost a matter of course; but the coexistence having been established their mutual relationship of cause and effect should not be so summarily settled as would seem to be the custom of the majority of oculists.

Neurological experience has so repeatedly demonstrated the fact that morbid states of the central and sympathetic nervous systems are frequent factors in the development of ocular symptoms, that it would seem necessary only to allude to it. Yet there is reason to believe that this phase of the question is constantly overlooked by ophthalmologists who make vain attempts at correction of visual anomalies which are purely secondary.

While marvellously astute in the interpretation of symptoms indicating organic disease, either of the optic nerve itself or of the nerves supplying the visual apparatus, the oculist seems to ignore the fact that the intrinsic and extrinsic muscles of the eye are subject to the same functional vagaries of innervation as other muscular groups. Indeed, when we consider the unwarrantable use of the eye demanded

by modern civilization it would seem inevitable that its functionating should be the first to participate in the disorder incident to a general nervous instability.

Psychopathic and neurasthenic persons with perverted innervation present an infinite variety of motor, sensory and psychic phenomena. These patients with their phobias and obsessions, their palsies, tics, and everchanging vascular and muscular tone, constitute a type long well known, and it is generally recognized that the therapeutic principle involved in the care of such cases is treatment of the individual rather than of the neurotic manifestations. That they have anomalous visual function is more than likely, but in the absence of demonstrable ocular defect, to attempt to relieve such symptoms by establishing artificial conditions of refraction and accommodation would seem as illogical as to cure a conjunctivitis without removing the causative cinder. Under such circumstances the oculist's efforts are not only futile, but not infrequently serve to aggravate the general nervous condition.

Experience with not a few such cases has led to the conclusion that it might not be amiss to call attention to facts which, although undoubtedly familiar, are not, it would seem, always kept in mind.

While the scope of this paper does not warrant a discussion of all the various ocular stigmata of hysteria, it may be permissible in quoting Binet's theory of the pathology of that protean malady as a basis of the ideas herein contained, to illustrate by two well known conditions. Binet as a result of his observations concludes that the disturbances which lie at the bottom of hysterical manifestations, no matter what their nature may be, must have their seat in the cerebral cortex, because in order that a peripheral stimulus may produce not only movements but also concepts, it must have reached the center in which concepts are formed—that is, the highest composite centers of the cerebrum.

This principle is especially applicable to hysterical amaurosis, which is probably not due to any failure of the retina to appreciate the images of external objects, but to a functional disturbance of the cortical centers.

Following a similar line of reasoning Binswanger maintains, it seems to me rightly, that the hysterical contracted field is the result of a cortico-sensory fatigue and of a disturbance of the faculty of concentration.

While it is held by some authors that in all hysterical disturbance of sensation there is some limitation of the visual field, the fact is this symptom partakes of the general unreliability of neurotic manifestations. Experience leads me to agree with Schweinitz and others that not infrequently hysterical patients present no change in the field. In a recent case of hysterical hemi-anesthesia my own observations, confirmed by the more skilful examination of an oculist, showed a perfectly normal field, both for white and colors.

I may say incidentally that my experience with neurotic inversion of the color field has not been impressive, having failed to establish, perhaps because of my imperfect methods, any definite coincidence between the insensibility to white and the sequence of color limitations.

Altho it is customary to consider the visual field contraction of hysteria an enduring stigma, it seems to me unquestionable that here, as in all other ocular neuroses, the results of examination may be greatly influenced by the varying conditions of emotion, exaltation or depression, because we have to do with the productive factor of disturbed cortical psychical functions rather than simple retinal fatigue.

The facts stated relative to hysterical blindness and contracted visual field are generally understood by oculists. They recognize these conditions as manifestations of a general nervous defect and realize that their treatment should be general instead of local. Were the same discrimination made in regard to anomalies of eye-muscle movements and accommodation this paper would be superfluous.

While the one time wholesale treatment of muscular imbalance by tenotomies and advancements has of late years been greatly modified by the use of prisms, it seems to be regarded as legitimate to resort to one or the other method in all errors of muscle movement, and seldom do we hear of effort being made to determine beforehand the true etiology of the individual case. In other words, there is a manifest neglect to differentiate between defects due to structural or insertional anomalies and errors of purely neurotic origin in which the imbalance is due to a general nervous instability, the defect being so to speak one of muscular movement rather than of the muscles themselves; probably a combination of paretic and spastic motor disturbances peculiar to hysteria closely connected with psychical processes.

Appreciating fully the educational value of prism exercises, I do not hesitate to state that in neurotic subjects this treatment may easily

be, and indeed frequently is indiscreetly used, resulting in marked aggravation of the general nervous condition.

An apparent example of such indiscretion may be found in the case of a patient who for many years had suffered from epileptic attacks. Altho there had never been tangible eye symptoms she had on general principles long since run the gamut of ophthalmological ministrations and when hope of relief therefrom was finally abandoned was left with a pair of weak "reading glasses" which seemed adequate. After a period of years during which her general health had been excellent, she developed a visual aura consisting of scintillating scotomas preceding for a half or three-quarters of an hour a convulsive seizure. These phenomena impelled her to seek the advice of an oculist who detected some imbalance and immediately inaugurated a series of vigorous exercises by prisms. The patient, who had previously suffered no inconvenience in the intervals between seizures, now had severe headache, vertigo, nausea, and general nervousness. A partial tenotomy was then done with the result of increasing all the nervous symptoms and the epileptic attacks became threefold more frequent. Notwithstanding her suffering, she was persuaded by the oculist, in whom she had the utmost confidence, to persist in the use of prisms of various angles and degrees for three months, when she became practically an invalid, confined to her room. At this time, by other advice, she abandoned all glasses and for two weeks was kept in darkness. She gradually improved, but altho she refrained for many weeks from any sustained use of the eyes it was fully six months before she had regained the ground lost by reason of meddlesome ophthalmology. It seems incredible that a visual aura which is known to be of central origin, and a muscular imbalance so slight as to cause no annoyance should have been considered sufficient excuse for persistent interference, but such are the facts.

From a neurological viewpoint it has always seemed probable that the ciliary muscle might participate in a general muscular instability and so cause transient errors of refraction changing from day to day, or even from hour to hour, but in personal interviews with several oculists they have seemed loth to admit this even as a possibility. While acknowledging that imbalance of the extrinsic muscles be a result of neurasthenia or hysteria, they apparently find it difficult to believe that the innervation of the delicate intrinsic muscles may suf-

fer, and they offer argument so veiled in ophthalmological technicalities (in which this department of medicine seems particularly rich) as to force upon us working in other fields of practice the conviction that it is not always easy to tell what an oculist means by what he says. Evidence culled from books and monographs is as a rule equally vague and conflicting, but confirmation by able men is not altogether wanting. Meige and Feindel, in their book entitled "Tics and Their Treatment," state that they have met with genuine professional cramps of accommodation in those who use the microscope as well as in opticians, watchmakers, etc., and in another place they say, "Since accommodation is a function subservient to the will, tics of accommodation are theoretically possible."

In Posey and Spiller's recent work, "The Eye and Nervous System," a section upon "Hysterical Cyclospasm and Cycloplegia" begins with the following sentence, "It is conceded that frequent ocular manifestations of hysteria are those concerned with anomalies of accommodation, particularly in the form of hysterical accommodation-spasm, or cyclospasm." Much space is then devoted to a consideration of this subject as well as that of cycloplegia and hysterical pupil phenomena, but throughout the article these conditions are evidently considered as sufficiently durable to call for local means of correction. Clinical facts do not bear out this theory.

It is probable that in the production of hysterical asthenopia with its accompanying symptoms of headache, photophobia, limited field, inco-ordination, etc., defects of both convergence and accommodation are involved. The assumption that these defects may be subject to such rapid and frequent changes as to make local treatment impracticable seems to be demonstrated by the following cases:

Case I.

Mr. L., age 46. Occupation, architect. Unmarried. Habits good. Of neurotic temperament, and an incessant worker. No previous illness, accident or injury. No specific history.

In July, 1905, after a long period of unusually hard work and worry, became nervous, irritable and insomnic. Finding that his eyes tired easily he consulted an oculist but attempts at wearing the glasses prescribed caused severe headache. Other oculists were visited; other glasses worn with increasing nervousness, constant dizziness, frequent headache and general discomfort. At the time of my first examination,

December 28, 1905, the man was suffering from marked depression; he was nervous, emotional, apprehensive and insomnic; he had headache, indigestion and constipation and had lost eighteen pounds in seven weeks.

All glasses were abandoned. He was directed to use the eyes as little as possible and was put upon a carefully considered schedule arranged according to the principle of alternating rest and exercise, baths, deep breathing, massage and diet. Free elimination was secured by way of bowels and kidneys as well as the skin, and improvement was not long delayed. On March 20, 1906, the record reads: "Is better in all respects; averages seven hours' sleep a night. The phobias and obsessions have largely disappeared and he has gained nearly ten pounds in weight."

His ophthalmological experience can best be told by extracts from a letter written by him upon the subject, in which he says:—"I enclose list of formulæ for glasses, as promised. They cover a period of five months. In at least one instance my eyes were measured by two oculists within four hours of one another with radically different results. All the glasses, except in one case, were examined and approved by the oculist before being worn. Each oculist was certain his prescription was right and all concurred in stating that there was nothing the matter with my eyes that proper glasses would not correct. All found a very slight muscular trouble which weak prisms would remedy. Nevertheless I did wear prisms without relief."

It is perhaps superfluous to say that this patient had lost confidence in the exactness of ophthalmological science and in the strict carefulness of ophthalmologists. It was with considerable difficulty that I persuaded him to entertain the idea that probably all the results obtained were accurate at the time of examination, the variations being due to changed conditions in himself.

For an analysis of the list of formulæ in this case as well as that in the succeeding case I am indebted to Dr. J. Miller Hinson, of Boston.

In the first case Dr. Hinson writes:—"On examining the records of the varying prescriptions given by the different oculists, nine in number, we find that they all agree as to the nature of the refractive error, namely, myopia with near-sighted astigmia. Two examiners considered the muscle imbalance of sufficient importance to be taken into consideration; one ordered trial prisms, the other incorporating the

prism correction in the lens formula. We will note first the range of deviation in the lens correction for the near-sight, next the astigmia and thirdly the difference in axes. The minimum myopic correction was one-half diopter and the maximum one and one-quarter, giving a variation of three-quarters of a diopter. We find the same liberality in the scope of variations, under the astigmic corrections the minimum being one-half and the maximum one and one-quarter. The figures are identical, but the effect on the patient from an illy corrected astigmia is more disastrous than from an error of relative proportion in the correction of a simple myopia. In reference to the axis we find that one prescriptoin calls for 90°, another 85°, another 82°. In the right eye we have a variation of eight degrees. In the left eye the prescriptions call for axis 180°, 170°, and one 165°. Here we have a variation of 15°. The distortion of images produced by a 1¼ astigmic lens in moving over an area of fifteen degrees must be seen to be appreciated. One prescription called ½ degree prism for the right eye. On the left ¼ degree base in and ¼ base down. A very scientific applying of prism effect, but one which we feel the eye of a neurasthenic would fail to appreciate.

Case II.

Mr. F. Family history negative. Age, 40. Occupation, merchant, indoors. Habits always good. Much brain work and responsibility. In 1903 suffered with intestinal indigestion and "nervousness;" was ailing about a year. No other illness, accident or injury. About May, 1907, became nervously tired, had some indigestion and much headache, which latter was attributed to eye strain. Glasses prescribed by a reputable oculist greatly increased his nervousness, produced vertigo, headache and nausea, and "spoiled his temper." During the next eight months he consulted four other oculists, receiving seven different prescriptions for glasses which he wore for varying periods without relief. At the time of my examination, May 14, 1908, he was depressed and inclined to be emotional. The dominant thought of eyes made concentration upon business affairs impossible. He had much digestive disturbance, apparently the result of hyperchlorhydria, and was badly constipated. Urinalysis showed greatly diminished elimination of solids and the presence of indoxyl. Objective examination revealed irritable heart, exaggerated reflexes and some impaction along the colon. He was directed to leave off all glasses, desist from reading

or writing, and was put upon a daily schedule similar to that of the preceding case. Free elimination was secured by salines. In two weeks he was relieved of all symptoms, physical and mental, and reported himself, to use his words, "practically speaking, well."

Dr. Hinson's analysis of the formulæ which this patient used is as follows: "The records of this case cover a period of eleven months. The original prescription was for compound myopic astigmia in the right eye, the lens reading — 0.25 diopter spherical combined with a — 0.25 diopter cylinder, axis 180°, with a 3½° prism base out, indicating a convergence.

The left eye correction was — 0.25 diopter spherical combined with + 0.50 diopter cylinder, axis 110°, with 3½° prism base out, making the combined prism strength 7°. After the prescription had been changed by seven oculists within the eleven months the final lenses given were for mixed astigmia in each eye and the prescription was as follows: Right eye — 0.62 diopter spherical combined with + 0.50 cylinder, axis 80°, with a ¾ degree prism base down. Left eye — 0.62 spherical combined with + 0.75 cylinder, axis 110°, the prism base out being eliminated."

These cases are fair samples of a considerable number among my records, and should serve to illustrate not only the inexpediency of attempting to correct visual errors of functional origin by means of glasses, but also the relief to be obtained to the general condition.

Because of such experience it may be pardonable to suggest that the anamnesis of every patient applying to the oculist should be carefully obtained with a view to eliminating possible etiological factors extraneous to the eye itself. If the patient belongs to the neuropathic type it would seem logical to insist upon complete rest of the eyes for days, or even weeks, before ocular tests are instituted. In those cases which my old instructor, Dr. Henry C. Angell, used to designate as "irritable eye" the advantage accruing to the patient from the use of one of the mydriatic alkaloids by dilating the pupil and paralyzing the ciliary muscle is obvious. Not only is there effected a temporary suspension of undue activity, but these drugs act temporarily as a local anesthetic and analgesic, thus soothing the nervous irritability of the eye.

With the factor of all recent strain eliminated, tests may be carefully made, the examination not being continued long at a time or too often repeated.

The results obtained from a considerable proportion of ophthalmological tests are so largely subjective that there is, especially in the class of patients under consideration, the greatest danger of error in consequence of the influence of suggestion which it is impossible to wholly eliminate. Therefore whenever applicable objective tests should be the ones relied upon.

As has been well said, malfunction is the beginning of all diseases, and of many it is the middle and end. In all cases of visual malfunction where no definite ocular defect is discoverable, I believe that the restoration of the patient to vigorous health by means of internal medication and prudent dietetic and hygienic regulation will be sufficient to relieve the eye symptoms without the necessity of a resort to glasses at all.

In conclusion permit me to say, I fully realize that this paper must necessarily lose in force because, owing to my lack of ophthalmological knowledge, I am unable to place my contention upon a strictly demonstrable basis.

I shall have accomplished my purpose, however, if my imperfect effort shall lead to the correction in any degree of the only fault (and that, like the Scotch girl's baby, is after all such a little one), which the neurologist has to find with his indispensable ally the ophthalmologist.

1069 Boylston Street.

DISCUSSION.

J. A. CAMPBELL (St. Louis, Mo.): This subject has been brought before our own society several times; I have myself presented a paper upon it here. Of course we know that ophthalmologists are somewhat uncertain and that neurologists are not infallible, but the difference is in the viewpoint: one sees disease as of peripheral origin the other as central. In a given case the one may be right, and in another case the other. The doctor has presented a case here where the patient suffered from too much interference at the hands of the oculists, but we could present scores where patients have gone from neurologist to neurologist without relief, but who have been entirely cured by a few interviews with an oculist.

One case that I happen to remember at the moment was a man who suffered with pains for a year, commencing in the right shoulder, going to right eye brow then to left eye and ending in left shoulder; he was under a leading neurologist trying different things; then for six months

he had scientific stomach treatment, and for some months was under nose treatments. Glasses carefully fitted to his eyes cured that man's shoulder. Every oculist in this room has had such cases of trouble manifesting itself, remote from the eyes, cured by properly adjusted glasses.

Oculists may make mistakes; I have made mistakes myself, but that should not be charged against ophthalmology. Many things that we call eye troubles are really nervous reflexes; the doctor is perfectly right in that. The trouble seems to be in the eye, but is based upon trouble in remote parts of the body perhaps. During the last year I had a case of what seemed to be optic neuritis with rapidly failing sight. Something about the case made me go into other symptoms; I found that she had a tooth capped on the same side, I examined it and found signs of its being ulcerated. It was extracted and the eye got well. Reflexes may come from any part. I have seen hysteria cured by appropriate glasses; I have seen nausea cured by glasses. The reflex may be in its origin peripheral or central. The doctor speaks of cramp of the accommodation in watchmakers. Many years ago Woodyatt gave as his opinion that myopia was produced by near use of the eyes. I subsequently examined one hundred watchmakers and fifty engravers and you will find the results of those examinations in the Medical Investigator of many years ago. The fact is, I found the eye that the watchmaker used was his best eye, because he used it with a lens and suppressed the vision of the other eye. One individual had used his eye in that way for forty years and still it was his best eye. I think that the subject is one of the greatest importance, and am glad that it has been brought up in this way. The doctor has done us a great service in prsenting the cases that he has of eye symptoms not due to anything in the eye. In a paper read by myself before this society on exophoria I emphasized the fact that the eye is often cured by putting the general system in order. I once had a case diagnosed as tumor of the brain, but it was entirely an eye case and has been well for twenty-five years. It is to be noted that often the slightest errors produce the greatest reflex effects, and conversely large refractive errors may produce none. That depends upon the neurotic temperament. It is the phlegmatic temperament that has the large errors without reflexes. The first is the best friend of the neurologists.

G. W. MACKENZIE (Philadelphia): Dr. Richardson's paper is a very valuable contribution because it calls our attention to a fact that we as ophthalmologists are apt to overlook. There is no doubt, as Dr. Richardson has pointed out, that many cases of ocular instability are rather the result than the cause of some of the neuroses, especially neurasthenia.

Neurasthenia never affects the idler but only the busy worker, and it manifests itself in the part where the greatest strain has been put. As an illustration of this we have the wrist drop of the painter. The

lead most affects the muscles most used, that is those of the forearm. The neuro-pathologist believes that there is a pathology of the neuroses, but it is as yet unknown. Marburg believes that the pathology of neurasthenia may be very similar to that of early multiple sclerosis but less intense, and clinically the two processes are so similar that one is often mistaken for the other even by the best neurologists. The pathology is that of partial destruction of the myelin sheath and this destruction of the myelin sheath affects most the neurons, supra- or infranuclear which are most taxed. Exactly as is the case of the painter with his wrist drop.

Physiologically we observe this absence of the myelin sheath in the crossed and direct pyramidal tracts in the new born infant, which accounts for the infant's inability to walk and to make proper movements, and the same may be observed in the movements of infant's eyes. The infant will squint and make other inco-ordinated movements of the eyes in an attempt to converge the axes. The new born infant as a result of the noninsulation of his supranuclear motor tract will exhibit the signs of a lateral sclerosis, namely: spasticity combined with paralysis, exaggerated deep reflexes and even Babinski's sign.

Coming back to the question of the neuroses we may observe the same phenomena, that is a combination of paralysis and spasticity in the extrinsic muscles of the eye, as pointed out by Dr. Richardson in hysteria and other neuroses, and it would be foolish for us as ophthalmologists to attempt to correct these by prism exercises. The proper man to handle such a case is the neurologist.

I would like to fill in a gap in Dr. Richardson's paper in regard to diagnosis in such cases. I found in experimenting among both normal and neurotic individuals certain facts, as follows: every normal person will show a slight degree of rhythmic nystagmus when looking in any extreme direction; the neurotic individual will show the same nystagmus but in a more marked degree. This nystagmus is analogous to the tremor shown when one attempts to contract any muscle excessively. The cause is the same in both instances; the excessive muscular strain requires an excessive voluntary cortical innervation and the impulse comes in an interrupted and not in a continuous stream, as one might think, hence the contractions are in waves. The interruptions are perceptible and physiological in healthy people, but in neurotic people the interruptions are more marked and exaggerated. Since the impulse in forced exertion is from the cortex, any abnormalities or variations in the behavior of the muscles must be due to abnormalities and variations in the cortex, as Dr. Richardson has already pointed out.

PRESIDENT WELLS: I see that Dr. Tiffany, of Kansas City, is present; we would esteem it a privilege if we could hear from him.

DR. TIFFANY: This paper is timely and interesting both in its subject and viewpoint. Both sides make mistakes no doubt; few of us are emmetropic and few are orthophoric. Errors may be found in the

mental processes of every individual. It is a great mistake for an oculist to regard his specialty as standing by itself, as it were, unconnected with the rest of the body; when he does that he will naturally attempt to correct locally every trouble that he sees in the eye as if it arose from the eye and nowhere else. If we know something of the whole human system and try to find out the etiological factors of our cases we would get along better and make far fewer mistakes. We should also be able to recognize the eye as a possible source of general trouble. In short, the oculist must be a man of broad knowledge.

J. RICHEY HORNER (Cleveland, O.): There are two points in Dr. Richardson's paper which, I think, should be impressed upon the minds of oculists pretty thoroly; one is that the neurologist is often in trouble for lack of knowledge concerning the eye and the other is that the oculist sometimse makes mistakes. There is no question but that some diseased conditions of the eye are absolutely dependent upon a condition of the nervous system remote from the eye. On the other hand, if the muscles of the eye are relieved from all possibility of imbalance and its consequent strain, it would and does greatly help the neurologist in his work. Why should we doubt that some functional disturbances of the eye having their origin in the general nervous system should be curable without glasses simply by restoring the general health?

It is a rule with me to have patients sent or coming to me, thoroly examined by a colleague, a member of this society, who has an office not far from mine. I get a report from him before I make my own examination. He, in turn, has in a number of instances brought his patients to me for an examination in regard to the condition of the nervous system. Frequently glasses are prescribed when the condition is one that requires treatment of a general character and not local, and just as frequently the reverse is done. Hence a paper like this is needed.

So, when we come to sift the matter down we will find that we are essentially in agreement. The nervous system cannot be blamed for all the conditions of the eye, nor can the eye be blamed for all the conditions of the nervous system. That is why we should co-operate and why each should know more of the other's specialty.

A neurologist is not a good neurologist unless he can examine the eye fairly well and determine whether it is right or wrong, and the oculist is not a good oculist unless he knows a great deal about the diseases of the general system. The best physician is one who knows his limitations and is wise enough to call in a specialist when the need for one arises. I bow to your superior knowledge of the eye and recognize my failings when it comes to an absolutely correct diagnosis of eye conditions.

N. B. DELAMATER (Chicago): I do not feel that there is any real difference of opinion between the two sets of specialists represented

here today. There is a difference in individuals, and the fault that may be found by either body with the other is rather the acts of individuals who do not appreciate the relation of the two subjects.

You have before you today a number of neurologists who have eyes and having eyes they see; they realize the fact that they have use for you and can get along better by availing themselves of your special knowledge, and we have a suspicion that you cannot always get along well without us. I go a step farther than Dr. Richardson did in his paper; is there any part of the body without nerves? No, then the neurologist must be an expert in every organ and portion of the body. A man cannot be a good neurologist unless he is a good general diagnostician and can tell whether the trouble then before him is of nerve origin or outside the nervous system. Nutrition has very much to do with every part of the nervous system and it has much to do with the eye. The eye is the first organ to show the effects of lack of nitrogen in the food.

The whole body is bound together; the cortex depends upon the chemical processes that are going on in digestion, the supplies that are available and the work that has to be done. If it gets in a poorly fed or in an unstable condition the whole nervous system suffers, and the eye as a highly innervated organ feels the effects of that condition. I agree fully with Dr. Richardson that many, many times when a patient comes to us with ten or more prescriptions for glasses, all different, that we have an unstable condition of the general system and that probably every one of the glasses was right at the time of the examination. I do go through the form of getting out the ophthalmoscope and looking at the eye and also of making some tests with the cards and getting the pupillary reaction, with practically every patient that I have.

I remember one case that I had, not very long ago, that I looked over two days in succession. The first time it was a short-sighted case, the next time it was a far-sighted case. I could make nothing else out of it the second time. I called to my aid an oculist who found that it was really a far-sighted case with acute ciliary spasm. The ciliary muscle is always getting in my way and I would like to know more about it than I do.

C. Gurnee Fellows (Chicago): I do not believe that there is any difference between us when you get right down to business. I believe that the neurologist should know everything, even all about the eye, and the oculists should be good all round doctors. But really it is not necessary nor true that a specialist has to know all about every other department of medicine and his own specialty too. Most of the patients that come to us, come from general practitioners who are up a stump and need special aid. We are in duty bound not to meddle with them and to send the patient back to the physician who sent him to us. We cannot send such a patient to a neurologist even if we think

that he needs the service of one, without the consent of the physician. This courtesy limits our power of doing the best thing for a patient at times.

I do believe that you will find that oculists call in the services of general diagnosticians and of specialists of other parts of the body as frequently as any other department of medicine. Finally the patient gets to the surgical specialist and he keeps him, they seldom get away from the surgeon. I do not see that it can do any harm to send a patient to an oculist or for the oculist to send a patient to a neurologist or any other specialist. The patient then comes back with a lot of data that will certainly be of use in making a cure. Every specialist should be a general practitioner before he becomes a specialist. No oculist should start out to practice his specialty until he has had a year or two in family practice. If he does, he lacks necessary experience. He should know a whole lot about bad teeth and shoe buttons in the nose and polypi in the rectum and the reflexes that they may cause.

It is true that oculists are not always to be depended upon; I will even agree with Dr. Campbell and say that I sometimes—rarely—make mistakes; but I am glad to have a red badge man admit it first. I believe that the trouble with those gentlemen who have been accused here of making ten or a dozen different glasses for a single patient was that they did not get help and did not know what they were prescribing for. Most of them also made a prescription at a single sitting. I find fault with them for that.

If you had attended our smoker last night you would have learned that all of us require at least two sittings and many of us three.

A few of us require three weeks and the use of atropin before prescribing glasses.

DR. CAMPBELL: Did I understand that both of the cases detailed in your paper took off their glasses altogether?

DR. RICHARDSON: Absolutely.

DR. CAMPBELL: Dr. Richardson has made it clear that we have not advanced in those particular cases at least. They both had myopic astigmia and they *do* require glasses because the vision was minus 0.50 with the cylinders, that would mean a reduction of vision to seven-tenths. Now that case might have been sent to an oculist and relieved. There was no doubt neurasthenia, or nervous instability, which is apt to occur in women where there are pelvic disturbances and ocular disturbances combined; but it is certain, it is absolutely proven, that the vision could not have been better than seven-tenths. There has been no statement made as to what condition the vision sense was in, and it seems to me that if there was good vision sense with combined myopic astigmia the whole condition might have been remedied by curing the optical error and hence the strain.

H. D. SCHENCK (Brooklyn-New York): I think there was con-

siderable carelessness shown in all those examinations. In a case with a history of previous failures, almost any oculist would have used a mydriatic.

C. JOSEPH SWAN (Chicago): These cases as given show to my mind that cases of myopia or myopic astigmia should always be considered as to the possibility of there being ciliary spasm as a complication. The point of the paper and discussion is that there should be a differentiation made between muscular imbalance and errors of refraction. A failure to make this distinction leads to trouble and mistakes. It is my habit to put the patient in all cases under a cycloplegic; if the headache and other symptoms are relieved it shows me something it has been a test and clears up the case as to diagnosis. Variation in the field is a symptom of hysteria; there is always variation in the field in that disease, from one day to another. We should realize also that there are many mixed cases, that is cases suffering from refractive errors and also having hysteria.

DR. RICHARDSON: I want to thank you, for your consideration and leniency; I think that I got off very easily. I do not see but that we are pretty well agreed upon this subject. I shall have to call to your minds and to Dr. Campbell's mind that in the early part of my paper I was particular to acknowledge that functional disturbances may be due to ocular defects. I congratulate my colleagues of the neurological society for their wide knowledge, their accurate knowledge of many things of interest to a society of ophthalmologists. While I believe that most neurologists are capable of detecting grave visual errors, I think that there are very few of us who are competent or have the special knowledge requisite to detect minute errors, and we should bear in mind all the time that a nervous system unduly responsive to irritation is affected by very small defects. I do not believe that we have many neurologists capable of detecting these small defects and, knowing that they ought to be detected, my respect for the ophthalmologist is profound. If my colleagues were here in force I would say—I will say—that it would be an excellent experience for all of them to write a paper like this on a subject that partakes of two specialties. When I started out I thought that I knew something about the subject but soon found that I had made a mistake in attempting it at all.

I can hardly think that there was careless work done in the various examinations of these oculists; these prescriptions were made by the most competent men we have, some of them of national and international reputation; men whom you know and have respect for. I do not believe that all those prescriptions were wrong. Of course it is self-evident that for two oculists to examine the same patient within four hours of each other shows a certain kind of carelessness, at least in getting the history of the patient, and yet these were all good men. You cannot get away from the fact that they did make these various prescriptions for the same cases; they did not find out that the patients were suffering from a general neurosis and not from a local eye trouble.

This was the point that I wanted to make; namely, that the work had been done by the best men and I felt that possibly some such word as this might well be said; I hoped that bringing it to the attention of this large body of ophthalmologists might do a little bit of good.

E. B. WOODWARD (Lincoln, Neb.): May I add just one word? It is patients of the particular type described by Dr. Richardson that are largely to blame for their own troubles. No patient has a right to go to one doctor one hour and to another doctor the next hour. Such a patient has failed to give either physician his or her confidence. If any of the physicians had realized that these patients were having the serious trouble that they were having, and the great difficulty in getting suitable lenses, that would have been one symptom or factor in the case. It would have in all probability resulted in any one of those physicians succeeding.

DR. RICHARDSON: That does not apply to these cases; the sole point is this: there is frequently in neurotic cases reflex irritation, and in such cases it should be looked for and searched for and remedied wherever possible. When you get a neurotic case presenting all the symptoms in the category, treat the whole individual and not the individual symptoms.

PHOTOTHERAPY IN EYE AND EAR DISEASES.

HERBERT DANA SCHENCK, B. S., M. D., O. ET A. CHIR.

Brooklyn-New York.

THE use of the therapeutic lamp described in the paper presented at the last annual meeting of this society has been continued in certain types of diseases of the eye and ear, and perhaps a report of some of these cases will further aid in determining the exact scope of this form of treatment.

In hordolum where the lamp ought to prove useful, only one case has presented itself for treatment and that was not successful, the increased pain and suppuration demanding incision two days after this treatment.

In ulcer of the cornea too small a number has been observed to prove much. The three that have been treated have all had some antiseptic applied locally with the indicated internal medication so that it was impossible to determine what the lamp did for them. But those cases that were treated, especially the nonvascular ones, were much more rapidly healed than others had been without the use of phototherapy.

The case of parenchymatous keratitis reported in the paper last year has continued to have treatment twice a week up to the present time, with considerable clearing of the deep exudate. This case has had longer treatment than any others I have ever given, in fact they were almost up to an aggravation. Most of the treatments in this case have been from 27 to 29 minutes, and the intensity of the light almost as much as the patient could bear. In the right cornea where there seemed to be little hope of doing much, as the dense white macula had been there for six or eight years, there has been a constant thinning out of the spots so that only two small ones remain. The vision in that eye has improved from counting fingers at a few feet up to 6/60. Fom the way the case is progressive, there is a chance of having this deep haziness entirely removed as well as the recent thinner exudate. Two-thirds of the patient's left cornea is as clear as any cornea, the deep dots of the exudate having entirely disappeared in all portions of the cornea except in the central third, which of course covers the pupil, and a somewhat

broad band extending from the border of the central mass towards the upper periphery of the cornea. In this central haziness there remains only two fine lines of the denser variety, the rest being thin so that she sees fairly well. The vision has risen from 6/30 to 6/12 with difficulty. When the lamp has been used up to the point of producing a considerable reaction, as is usually the case, there has been not only a considerable deep bulbar redness, but for several days after the treatment some aching of the eyes and surrounding tissue. It has been necessary of late in order to produce an effect to bring the treatments up to this point. What seems to be particularly satisfactory in this treatment is that the cornea when cleared is free from every bit of haziness, leaving no thin cloud which oftentimes interferes so materially with vision.

In iritis the lamp has certainly been of signal benefit. An acute attack of acute iritis, which usually has a course from three to five weeks can ordinarily be cured in seven to fourteen days by the use of the lamp.

One case reported in my paper of last year as having a recurrent attack of iritis has this iris tightly bound down to the lens as she has for the past three years. She developed iritis in this eye on New Year's Eve, 1908. A treatment was given on New Year's Day, and daily thereafter for six days. The attack promised to be moderately severe when compared with her other attacks. There had been some pain during the night altho atropin had been used; there was moderate ciliary injection and some vitreous haziness. There was a great improvement following the second treatment, and still a greater one on the third day so that by the fourth day there was no redness, the pupil was dilated to the point where it had been at the previous attacks and the vision had returned to 6/12, which has been the best vision she has had in that eye for three years. In four previous attacks, which apparently began in the same way as this one, she had had treatment three times without the lamp and in each instance the case had dragged itself along for four or five weeks and twice for nearly two months before clearing up entirely. Last year with the lamp the attack was considerably shortened and more so this year, which seems very convincing proof of the efficacy of the lamp in this form of inflammation.

In another case of recurrent iritis in a nervous dentist who was very intolerant of pain and of treatment, the lamp at first gave prompt re-

lief. He was first seen January 7th, after having passed a sleepless night on account of the pain. There was considerable photophobia, lachrymation and other symptoms of iritis. He was given daily treatments from January 7th to January 13th. After the first two treatments he had no further pain, the circumcorneal injection rapidly subsided and all the other symptoms showed marked improvement. A number of small new adhesions, which formed before the case came under treatment, were broken leaving only the deep ones from the previous attacks. There was apparently no exposure or other cause for a relapse on the 13th, when his eye became very much worse, the 7th day of the treatment, and from that time failed to respond to the treatment of the lamp. The treatment he had after this failed to make any impression in relieving the pain and controlling the inflammatory symptoms. He was unable to continue his visits to the office, and, as he had no equipment at his house sufficient to permit the use of the 500 candle power lamp, the usual treatment, locally and internally, had to be resorted to and utterly failed to relieve him. I lost track of the case before it was finished.

In a recent case of iritis that had probably existed for several weeks there was a history of moderate scleral injection, some photophobia, lacrymation and pain the previous night. This case was treated in May, 1908, and the probabilities are that she had had one or more previous attacks several weeks before of very slight type, as there were several small and one large adhesion when the pupil was dilated. Five daily treatments with the lamp, each of ten to twelve minutes' duration, rapidly relieved the inflammatory symptoms and she had no more pain. The largest adhesion was broken up in three days, as were all the small ones except one near the periphery of the iris which was stretched so that it will be very little drag upon the iris when the pupil is contracted. After the five daily treatments she had one or two slight aggravations from exposure to light and air so that the treatments were continued every second day for the next week and then two treatments three days apart, apparently putting the eye in condition so that there was no further aggravation and all the haziness of the media had cleared up so that her vision was as it had been before the attack.

In this class of cases it has been my habit to use the lamp directly to the affected eye, from ten to fifteen minutes as near the eye as the patient will permit you to hold it and not burn the lid.

In several cases of iridocyclitis, particularly following injuries or operations, there has been a very marked improvement after moderately prolonged treatments. Last summer a postoperative case which had dragged along for some time without apparently making any progress at once began to improve so that in ten days the patient was ready to go home, whereas in the previous ten days there had been almost no change in the sensitiveness and signs of inflammation.

A case of glaucoma reported in my former paper in a man who was very myopic, about 60 years of age, who had sight only in the left eye as the right had been lost by glaucoma simplex and atrophy some years ago, had a recurrence of the hemorrhages into the retina and vitreous humor which is moderately fluid, resulting in a great loss of vision which failed to clear up under eserin and internal medication. Several weeks of treatment every other day from twelve to fifteen minutes with the lamp has resulted in cleaning up all the retinal hemorrhages and many of those in the vitreous humor. Altho he had a distinct plus tension last year there is nothing of that kind discernible at the present time and his vision has increased from counting fingers at six feet to 6/30 s. d.

The lamp has also been used in a case of haziness of the vitreous in a young man who has a history of primary syphilis, having been inoculated last June and developing secondary symptoms, iritis, mucous patches, etc., in September. There was contraction of the field but no signs of atrophy, altho the vision was reduced when first seen thro the "dust" in the vitreous to counting the fingers at six feet. This gradually improved under the administration of mercurius biniodide, followed by moderate doses of iodide of potash, until his vision became 6/30. On the last Saturday in March, however, without consulting me he played a very strenuous game of lawn tennis, which completely fagged him out physically and his vision at once dropped down to counting the fingers at 75 centimeters. Nothing improved it until he was given treatments of fifteen to eighteen minutes with the lamp, when his vision slowly began to improve and is now so that he can count fingers at 3 meters. Whether it will progress beyond that point it seems impossible to say. Altho his field is moderately contracted and there has been no increased contraction in the recent aggravation this eye fails to react to the lamp even tho the temperature almost blisters the lids, unless it is used for twenty or twenty-two minutes, and then there is very little apparent effect upon the eyeball.

speculum well into the canal so that the rays would play directly upon the membrana tympani. When the rays had been concentrated on the membrane for from eight to ten minutes there was considerable increase in the redness with some anesthesia. There was no pain after the first treatment on the 10th, and daily treatments on the 11th, 12th, 13th and 14th resulted in the acute symptoms very rapidly disappearing with a return of the hearing which had been moderately impaired. Treatments were then given every third day for two treatments and then on the third day the case was so free from signs of inflammation with such good hearing that she was dismissed cured. There had been a very profuse secretion of thick, stringy, mucilaginous discharge from the posterior nares, which rapidly cleared up under local oily applications and the administration of hydrastis 3x. The lamp however appeared to be the effective agent in controlling the acute inflammation of the middle ear, whether on account of the method employed in throwing the rays directly on the membrane or not I am not prepared to say. Other cases treated in this manner since then have almost invariably resulted in a relief of the pain and in an apparent control of the inflammation. It does not however apparently improve the function as rapidly as will pneumomassage.

In treating most of the eye cases the tendency the past year has been rather to increase the duration of the treatments. Where cases of iritis and even other superficial diseases were formerly treated only six or eight minutes, they are now usually extended to eight, ten, or even fifteen in many cases after the toleration of the eye is established. It seems to me that better results are obtained from the longer treatment than from the shorter ones. The light is held in the eye and ear cases as near to the patient as he will tolerate the heat.

Although my leucodescent lamp is equipped for the use of colored plates I have been unable to get sufficient data to enable me to determine just when these various colored disks would be most useful, hence I have as yet not used them enough to give any opinion as to their efficacy.

75 Halsey Street.

DISCUSSION.

E. J. BISSELL (Rochester, N. Y.): My opinion of phototherapy as expressed in a discussion of Dr. Schenck's former paper has undergone some slight modification during the past year.

In diseases of the ear the lamp is very serviceable in furunculosis. A child which was not seen until after the boil had ruptured and there had been a fairly free discharge of pus, was treated with the lamp to relieve the pain as the mother did not wish the child to be operated upon without an anesthetic, which was impracticable in the office. The first treatment of the lamp gave him relief from the pain, which had been intolerable the night before. The application was not applied diffusely to the ear and head but directly into the canal through a speculum. The whole head and face were covered with a towel and the auricle with some absorbent cotton, which was also packed around the speculum to protect the tissues from the hot metal, fitted into the canal so that the furuncle was easily seen at its inner end. The rays were played into the speculum as strongly as the child would permit for eight minutes. The speculum became quite warm but as cotton was packed around the cavity there was no burning and little discomfort.

In another severe case in an adult the pain had been almost intolerable and the physician in attendance had feared mastoiditis when I was called in consultation. I was satisfied however that there was not the slightest trouble in the mastoid and only a moderate amount in the middle ear, most of the pain being due to the large furuncle which extended into the canal from its posterior and upper wall almost occluding it. Treatments were given through the speculum every second day, as in the case of the child. The result was a very speedy resolution of the furuncle. There was no pain after the first treatment, and a rapid subsidence of the discharge from the middle ear from an old suppurative inflammation. The man suffers from an aggravated form of atrophic rhinitis with offensive crusts in the nares, which he has kept fairly under control by the frequent use of alkaline cleansing mixtures, followed by benzoinol and pine needle oil. The treatment with the lamp, however, did not relieve the inflammation in the middle ear or improve the hearing, altho it was kept up for some time after all signs of the furuncle had gone.

An attack of acute otitis media catarrhalis which began on January 9th, in a woman in the 8th month of pregnancy, after the patient had gone to bed, resulted in a sleepless night in spite of local applications that were made. The membrana tympani was exceedingly red with numerous capillary hemorrhages scattered over its surface. the treatment in this case was given in the way detailed above, by fitting a

I have seen very excellent and quick results. All of these cases are immediately given the lamp, with universally satisfactory results.

The lamp has proven to me of the greatest value in these superficial diseases and has been well worth the time given to its use.

I am inclined to think I have given longer applications of the lamp than has Dr. Schenck, as my usual treatments are from fifteen to thirty minutes each.

One severe case of iritis was given treatments almost daily for three weeks with a perfect cure. I am satisfied that the lamp cut short the duration of this case, but I have not seen the duration of iritis cut down to from one to two weeks. As I meet in my private work but a very few cases of iritis I may have better results from more experience.

As to the use of the colored plates with the leucodescent lamp, I inquired of an eminent specialist in the use of electricity and light therapy the indications for the different colors. He replied that he thought the principal factor in the lamp was the heat which was of value in inflammatory conditions, that he thought the blue plate should theoretically be of most value in the relief of pain.

BURTON HASELTINE (Chicago): I have used the lamp in the treatment of acute superficial inflammations with fairly good results, but this report of the aborting of styes does not impress me greatly; styes aborted in ten days does not sound very startling to me. That case of iritis reported in the discussion does not strike me as anything remarkable either. There seems to me no great difference from the results obtained in iritis or other acute inflammatory conditions by the usual methods.

H. S. WEAVER (Philadelphia): I have used the leucodescent lamp and my best results have been in furunculosis of the ear. Some cases of furunculosis of the external canal give considerable trouble and have a tendency to recur. It has been my practice the last year or so to use the light on all cases; I do not know whether they have been mild cases or not but I am sure that they give less trouble than they used to. One or two treatments with the lamp with ten or fifteen minutes' exposure have cleared up all the cases that I have had since that time.

I have also used it in iritis with decided benefit, but I have always employed other measures at the same time, hence cannot be sure of what it would do alone. The patients tell me that they have been freer from pain than in other attacks, and it seems to me that the inflammatory condition disappeared quicker.

I. O. DENMAN (Toledo, O.): Do you use the light plain?

DR. WEAVER: I use it plain, placing a wet towel around the ear so as to get the direct effect upon the furuncle. I apply it just as hot as they will stand it. I bring the lamp as close as I can for a few seconds and then increase the distance for a few seconds and so on.

I would like to report a case of sympathetic irritation that I treated

In ear diseases the use of the therapeutic lamp has continued to be disappointing. Aside from the temporary relief of pain, I would not greatly miss the instrument in aural work. All of us see acute inflammation of the ear rapidly subside under ferrum phos. or pulsatilla, and the usual attention to the nose, throat and ear. I cannot say that I have hastened or increased the number of favorable results by the use of the lamp. The fact is that some cases, seemingly no worse than others, will go on to a serious condition in spite of all measures employed, and will ultimately require an operation.

I have not tried to pass the light through a speculum. Possibly Dr. Schenck has secured some additional benefit in thus bringing the rays directly to the inflamed surface. If this is so it goes to confirm the points made in my former discussion—that deep inflammations are not reached to any great extent by the chemical rays; whatever benefit comes in such cases is mostly due to the heat rays. This is in accord with the experiments of scientists who have shown that as the violet end of the spectrum is reached the penetrability of the rays gradually diminishes, and at the end even a thin layer of blood presents almost a complete barrier.

Added experience has more strongly confirmed me in the value of the therapeutic lamp in many eye diseases. I have seen great benefit from it in sluggish ulcers of the cornea, and in all forms of chronic keratitis.

It is certainly an aid in clearing up intra-ocular exudates, especially is it helpful after the acute inflammatory stage has passed. During the acute stage it may aggravate the condition.

I have often been impressed with the similarity in its effects to dionin.

A. B. Norton (New York): Dr. Schenck's paper is certainly a very interesting and instructive one, as every additional experience with a new method of treatment helps us in determining the true field of its adaptation. My experience with the leucodescent lamp has been confined to its use in diseases of the eye as I discontinued the treatment of ear diseases some years ago.

In hordeolum I recall four cases treated with the lamp, and presume there have been more. In every case the stye has been aborted, *i. e.*, absorbed without breaking or being opened. In three of these cases the lamp was used early; in one, but one treatment was given, while the other two were treated three times each. The fourth case I certainly expected would have to be opened as the tumor was about the size of a hazel nut with decided swelling and redness of the lids. The lamp was used for about fifteen minutes daily for ten days by which time the swelling was reduced to one-third its size at the start and the patient was permitted to return to her home in New Orleans. She was seen about five months later and no evidence of induration or trace of the trouble could be discovered.

In ulceration of the cornea and in acute infectious conjunctivitis

with the lamp. A boy lost his right eye from an explosion; there was detached retina as a result. Eighteen months after the accident he came to me for pain in the other eye; it had come on about four months before. The tension was plus one and the vision twenty-fortieths. There were some retinal changes, the field was contracted and there was constant pain. After three applications of the lamp on alternate days the pain ceased absolutely and has not returned since. The vision improved to twenty-thirtieths and the tension became normal. I gave the treatment in both eyes and, what makes me feel more positive in the results, I gave absolutely nothing else. I advised enucleation but it was refused.

DR. SCHENCK: I have nothing to do with Dr. Norton's results in treating styes. My own results in treating iritis have been much better since I have used the lamp than before. I have had cases that have had attacks previously and have treated them myself, and then in the same individual have treated an attack with the lamp and have noticed the results absolutely positive, so far as my judgment goes. A case of intra-ocular hemorrhage in the retina that had been treated for weeks in the old way without change for the better or in the appearance of the hemorrhage, was cleared up in ten days by the use of the lamp.

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CONSTITUTION

ARTICLE I.—NAME AND OBJECT.

This association shall be styled the American Homœopathic Ophthalmological, Otological and Laryngological Society, and its object the study of the eye, ear, nose and throat, with particular reference to homœopathic therapeutics.

ARTICLE II.—MEMBERS.

The society shall be composed of those physicians who are already members, and of such others as may be hereafter chosen in conformity with the by-laws.

ARTICLE III.—QUORUM.

At any meeting of the society eleven members shall constitute a quorum.

ARTICLE IV.—OFFICERS.

The officers of the society shall be a president, two vice-presidents, a secretary, and a treasurer, who shall also constitute an executive committee of the society.

ARTICLE V.—AMENDMENTS.

This constitution may be altered or amended by a vote of two-thirds of all the members present at the regular annual meeting, provided that notices of such alteration or amendment shall have been given in writing at a previous annual meeting of the society.

BY-LAWS.

ARTICLE I.—MEETINGS.

This society shall hold at least one session in each year, at such time and place as may be determined upon.

ARTICLE II.—ELECTION OF OFFICERS.

SECTION 1. The officers shall be elected by ballot at each annual meeting of the society, and shall enter upon their respective duties immediately after the close of the annual session.

SEC. 2. The regularly chosen officers of this society shall constitute an executive committee, which shall arrange the business of the session, attend to matters of business not otherwise specially provided for, and perform such other duties as may, by vote of the society, devolve upon them.

ARTICLE III.—DUTIES OF OFFICERS.

SECTION 1. The president shall preside at the meeting of the society, and perform such duties as may, by vote of the society, be devolved upon him. He shall deliver an address at the opening of each annual session, upon such subject as he may select.

SEC. 2. The vice-presidents in their order shall perform the duties of the president in his absence or disability.

SEC. 3. The secretary shall keep a record of the proceedings of the meetings, conduct the correspondence of the society, issue notice of meetings, and notify members of their election.

SEC. 4. The treasurer shall receive all money belonging to the society, shall make all disbursements under the recommendation of the president, and shall furnish at each annual meeting a written report of the condition of the finances.

ARTICLE IV.—CENSORS.

There shall be a board of censors, consisting of five members, who shall receive and examine the credentials of candidates for membership, and report to the society for election such as may be found properly qualified. The members of said board shall be elected by ballot at each annual session to serve for one year from the first day of January next succeeding said election.

ARTICLE V.—MEMBERSHIP.

SECTION 1. Any regular qualified and reputable physician endorsed by two members, may be elected to membership in this society.

SEC. 2. The admission fee of each member of the society shall be two dollars.

SEC. 3. Members shall pay annually the sum of three dollars toward defraying the expenses of the society.

SEC. 4. The election of no member shall be considered completed until he shall have paid his admission fee and annual dues; and his membership can only be continued by the annual payment of these dues. Until his dues are paid he may not participate in the active work of the society. He may at any time within three years, however, complete his membership by paying his dues for the current year, together with any back dues that may have accrued against him.

SEC. 5. Members neglecting the payment of dues for three years, after proper notification from the treasurer, shall have their names dropped from the roll of membership. Any person thus dropped shall have the privilege of reinstatement by paying all arrearages, on recommendation of the board of censors.

SEC. 6. Any physician of eminent attainments in the special fields of medicine with which this society is concerned, may be elected an Honorary Member on recommendation of the board of censors at any annual meeting of the society, and shall be exempt from dues and shall have all the privileges of members, except voting and eligibility to office.

SEC. 7. Any foreign physician may be elected a Corresponding Member of the society at any annual meeting, on recommendation of the board of censors, and shall have all the privileges of members, except voting and eligibility to office.

ARTICLE VI.—RULES OF ORDER.

SECTION 1. The rules governing the deliberations of this society shall be those found in Roberts' Rules of Order.

SEC. 2. No report or paper shall be received by the society in an incomplete or unfinished condition, and the title of any proposed paper shall be forwarded to the president by April 1st of each year and the completed paper by May 1st.

SEC. 3. The time allowed for the presentation of any paper shall be twenty minutes. The leading discussion shall not exceed ten minutes, and all other discussion five minutes for each speaker.

ARTICLE VII.

These by-laws may be altered or amended by a vote of two-thirds of the members present at the annual meeting.

STANDING RESOLUTIONS.

Adopted June 19, 1899:

"*Resolved,* That the Committee on the Nomination of Officers shall consist of all the ex-presidents of the society present at any meeting, provided that in any case less than three be present the president shall appoint from the members present a number sufficient to make the committee consist of three members."

Amended June 27, 1905:

"*Resolved,* Any five members in good standing may propose in writing to the Nominating Committee nominations for any or all of the offices. All such nominations must be made on the first day of the session. The committee shall report all such nominations together with any that it may see fit to add. The candidates shall be voted for by ballot in accordance with Article II., Section 1, of the Constitution."

Adopted June 16, 1900:

"*Resolved,* That all papers presented before this society shall become its property and be *first* published in its official organ; and, furthermore, be it

"*Resolved,* That the Homœopathic Eye, Ear and Throat Journal be continued as the official organ of the society."

Adopted June 19, 1900:

"*Resolved,* That the president be requested to appoint at each annual meeting a committee of three members on transportation, who shall act, as far as possible, conjointly with the same committee of the Institute."

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